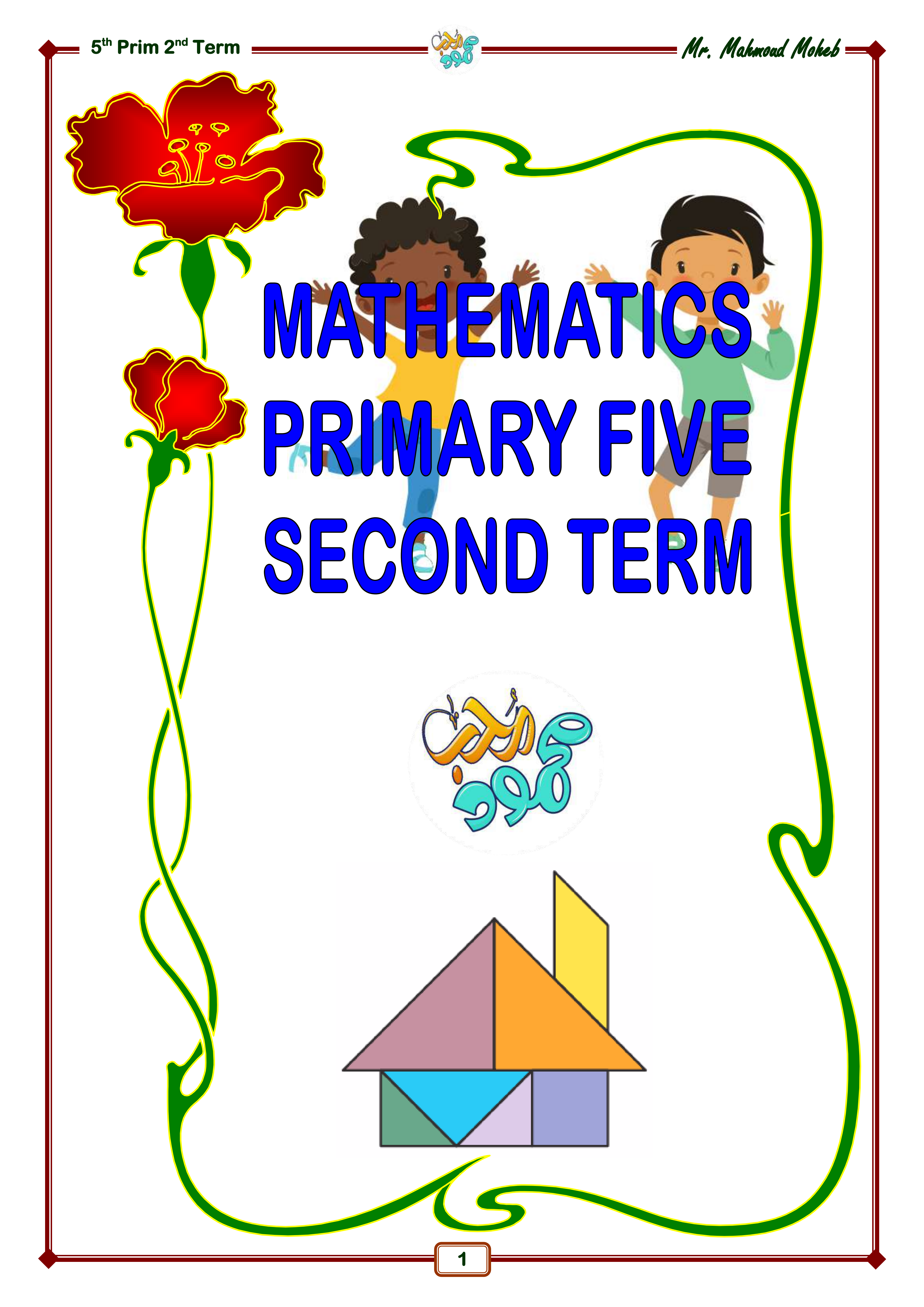


MATHEMATICS
PRIMARY FIVE
SECOND TERM





Theme (3) | Fractions, Decimals, and Proportional Relationships

Unit (7) | Adding and Subtracting Fractions

Pre-study

Concept (1) | Adding and Subtracting Fractions with Unlike Denominators

Unit (8) | Adding and Subtracting Mixed Numbers

Concept (1) | Working with Mixed Numbers

Concept (2) | Adding and Subtracting Mixed Numbers with Unlike Denominators

Unit (9) | Multiplying and Dividing Fractions

Concept (1) | Multiplying Fractions and Mixed Numbers

Concept (2) | Dividing Whole Numbers and Unit Fractions

Theme (4) | Applications of Geometry and Measurement

Unit (10) | Two-Dimensional Figures and Coordinates Plane

Concept (1) | Investigating Attributes of Shapes

Concept (2) | Coordinates Plane

Unit (11) | Volume

Concept (1) | Understanding Volume and Capacity

Concept (2) | Measuring Volume

Unit (12) | Pie Charts

Concept (1) | Understanding Pie Charts




UNIT
7

Theme 3 | Fractions, Decimals, and Proportional Relationships

Unit 7
Adding and Subtracting Fractions

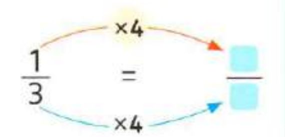
Photo Credit: Konstantin Zabalin / Shutterstock.com

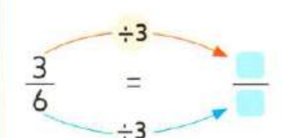


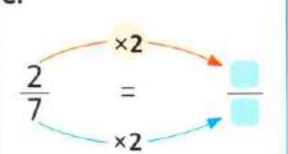
Pre-Study

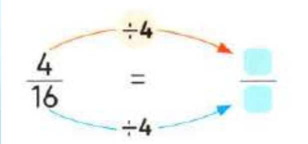
Lesson (i) Equivalent Fractions

Complete to find equivalent fractions.

a. 

b. 

c. 

d. 



1. Complete.

- $\frac{2}{8} = \frac{6}{\ } = \frac{\ }{16} = \frac{\ }{4} = \frac{\ }{\ }$
- $\frac{12}{18} = \frac{6}{\ } = \frac{\ }{6} = \frac{\ }{\ }$



Complete.

a. $\frac{2}{3} = \frac{\square}{9}$ b. $\frac{4}{6} = \frac{12}{\square}$ c. $\frac{3}{6} = \frac{\square}{2}$

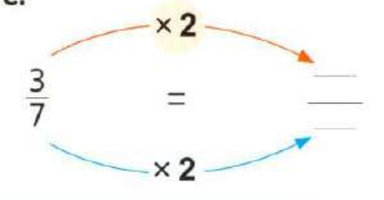
d. $\frac{2}{7} = \frac{\square}{14}$ e. $\frac{8}{10} = \frac{4}{\square}$ f. $\frac{\square}{6} = \frac{10}{12}$



Complete to find an equivalent fraction.

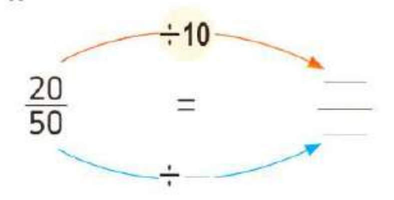
a. × 4: $\frac{1}{3}$ = ——— × 4

b. × 5: $\frac{2}{5}$ = ——— × 5

c. 

d. ÷ 3: $\frac{3}{6}$ = ——— ÷ 3

e. ÷ 4: $\frac{4}{8}$ = ——— ÷ 4

f. 



Lesson (ii) — Simplest Form of a Fraction

Complete to Simplify the Fractions:

$\frac{14}{35} = \frac{\dots}{\dots}$ (÷7, ÷7)	$\frac{3}{18} = \frac{\dots}{\dots}$ (÷3, ÷3)	$\frac{10}{15} = \frac{\dots}{\dots}$ (÷5, ÷5)
$\frac{16}{32} = \frac{\dots}{\dots}$ (÷4, ÷4)	$\frac{33}{44} = \frac{\dots}{\dots}$ (÷11, ÷11)	$\frac{24}{40} = \frac{\dots}{\dots}$ (÷8, ÷8) 



Simplify:

a $\frac{5}{10} = \frac{\dots}{\dots}$

b $\frac{2}{6} = \frac{\dots}{\dots}$

c $\frac{6}{12} = \frac{\dots}{\dots}$

d $\frac{6}{9} = \frac{\dots}{\dots}$

e $\frac{5}{20} = \frac{\dots}{\dots}$

f $\frac{6}{21} = \frac{\dots}{\dots}$



Concept (7-1)

Lesson (1) Finding Like Denominators Using the LCM

Change into like denominator fractions:

a. $\frac{7}{8}$, $\frac{5}{24}$ | b. $\frac{5}{22}$, $\frac{9}{11}$ | c. $\frac{8}{15}$, $\frac{5}{6}$



Choose the correct answer:

1. The L.C.M of the denominators of $\frac{7}{12}$ and $\frac{5}{18}$ is ______

   A. 12 B. 36
   C. 18 D. 6

2. The smallest like denominator of $\frac{1}{6}$ and $\frac{4}{5}$ is ______

   A. 5 B. 4
   C. 30 D. 6

3. The smallest common denominator of the fractions $\frac{2}{3}$ and $\frac{4}{9}$ is ______

   A. 3 B. 6
   C. 9 D. 12

4. Which of the following is not equivalent to $\frac{15}{20}$?

   A. $\frac{3}{4}$ B. $\frac{30}{40}$
   C. $\frac{25}{100}$ D. $\frac{9}{12}$

5. The fractions which are equivalent to $\frac{5}{6}$ and $\frac{7}{8}$ with the like denominator are ______

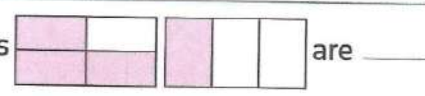
   A. $\frac{15}{18}, \frac{14}{18}$ B. $\frac{20}{48}, \frac{42}{48}$ C. $\frac{10}{12}, \frac{10}{12}$ D. $\frac{20}{24}, \frac{21}{24}$

6. Which of the following is equivalent to the pair of fractions $\frac{5}{6}$ and $\frac{1}{4}$ using the L.C.M of their denominators?

   A. $\frac{20}{24}, \frac{6}{24}$ B. $\frac{10}{16}, \frac{4}{16}$ C. $\frac{10}{12}, \frac{3}{12}$ D. $\frac{40}{48}, \frac{12}{48}$

7. The two like denominator fractions represent the models [model] [model] are ______

   A. $\frac{3}{4}, \frac{1}{3}$ B. $\frac{6}{8}, \frac{2}{8}$ C. $\frac{8}{12}, \frac{4}{12}$ D. $\frac{9}{12}, \frac{4}{12}$



Homework

Change into like denominator fractions:

a. $\frac{4}{9}$ and $\frac{2}{3}$

b. $\frac{1}{3}$ and $\frac{2}{7}$

c. $\frac{1}{5}$ and $\frac{1}{4}$

d. $\frac{2}{9}$ and $\frac{7}{12}$

e. $\frac{5}{6}$ and $\frac{3}{8}$

f. $\frac{2}{3}$ and $\frac{1}{4}$

g. $\frac{3}{4}$ and $\frac{5}{12}$

h. $\frac{5}{8}$ and $\frac{7}{12}$

Complete:

a. The L.C.M of the denominators of $\frac{4}{5}$ and $\frac{2}{25}$ is ....

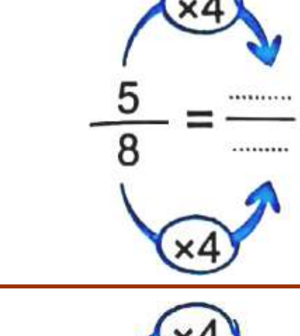
b. The L.C.M of the denominators of $\frac{1}{3}$ and $\frac{5}{12}$ is ....

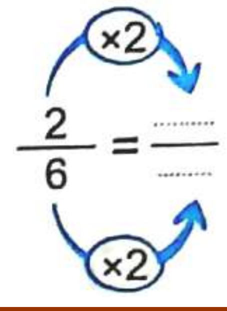
c. The smallest like denominator of $\frac{2}{3}$ and $\frac{3}{4}$ is ....

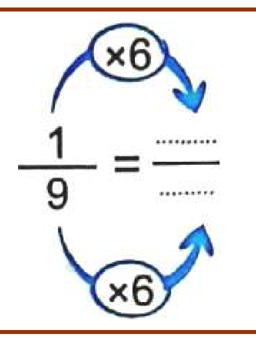
d. The L.C.M of the denominators of $\frac{2}{5}$ and $\frac{1}{3}$ is ....

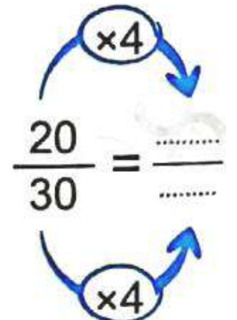


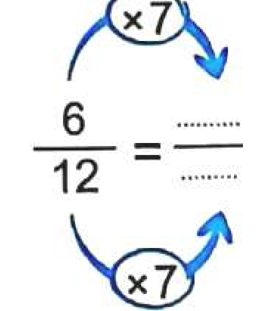
Complete to get equivalent fractions:

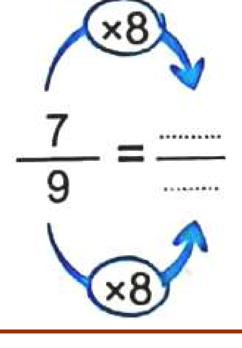














Lesson (2) Using Models to Add and Subtract Fractions with Unlike Denominators

Use the fraction wall to evaluate each sum or difference:

(1) $\frac{1}{2}+\frac{1}{3}=$ ....

$\frac{1}{2}$			$\frac{1}{2}$		
$\frac{1}{3}$		$\frac{1}{3}$		$\frac{1}{3}$	
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

(2) $\frac{1}{2}+\frac{1}{4}=$ ....

$\frac{1}{2}$		$\frac{1}{2}$	
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$



(3) $\frac{3}{6}+\frac{1}{4}=$ ....

$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$		
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$

(4) $\frac{7}{10}-\frac{2}{5}=$ ....

$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

(5) $\frac{3}{5}-\frac{1}{2}=$ ....

$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

(6) $\frac{9}{12}-\frac{1}{6}=$ ....

$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$



Lesson (3) — Adding and Subtracting Fractions with Unlike Denominators

Evaluate by rewriting the fractions with like denominators:

a. $\frac{5}{16} + \frac{3}{8}$ ______

c. $\frac{2}{7} + \frac{3}{14}$ ______

b. $\frac{7}{9} - \frac{1}{3}$ ______

d. $\frac{7}{10} - \frac{1}{5}$ ______



Evaluate by rewriting the fractions with like denominators:

1. $\frac{3}{5} + \frac{1}{3} =$ ______

2. $\frac{11}{12} - \frac{7}{8} =$ ______

3. $\frac{1}{5} + \frac{1}{2} =$ ______

4. $\frac{5}{9} + \frac{1}{2} =$ ______

5. $\frac{3}{4} - \frac{1}{3} =$ ______

6. $\frac{1}{2} + \frac{1}{3} =$ ______



Lesson (4)

More of Adding and Subtracting Fractions with Unlike Denominators

Choose the correct answer :

a. If $\frac{1}{15} + \frac{2}{5} = \frac{1}{15} + \frac{x}{15}$, then $x =$ ....

A. $\frac{6}{15}$ **B.** $\frac{3}{20}$ **C.** $\frac{7}{15}$ **D.** 6

b. The sum of $\left(\frac{2}{3} + \frac{7}{9}\right) =$ ....

A. $1\frac{2}{9}$ **B.** $\frac{2}{9}$ **C.** $1\frac{4}{9}$ **D.** $\frac{4}{9}$



Find the value of k in each of the following .

1. $\frac{1}{4} + k = \frac{7}{8}$ ....
2. $k - \frac{1}{5} = \frac{1}{6}$ ....
3. $\frac{2}{3} - k = \frac{1}{4}$ ....



Maha has $\frac{1}{2}$ kg of flour. She used $\frac{2}{5}$ kg of it. **What is the rest with her ?**

....



Homework

Evaluate by rewriting the fractions with like denominators:

1. $\frac{1}{3} + \frac{1}{4} =$ ______

2. $\frac{1}{3} - \frac{1}{4} =$ ______

3. $\frac{1}{2} + \frac{2}{5} =$ ______

4. $\frac{1}{2} - \frac{2}{5} =$ ______

5. $\frac{5}{6} + \frac{3}{8} =$ ______

6. $\frac{5}{6} - \frac{3}{8} =$ ______



Evaluate by rewriting the fractions with like denominators:

1. $\frac{1}{6} + \frac{5}{8} =$ ______

2. $\frac{7}{9} - \frac{1}{6} =$ ______

3. $\frac{1}{8} + \frac{3}{5} + \frac{9}{10} =$ ______



Karim walked $\frac{1}{5}$ km and Sameh walked $\frac{1}{3}$ km more. **What distance that Sameh walked ?**

______

Add:

1. $\frac{1}{3} + \frac{1}{4} =$ ____________________

2. $\frac{1}{4} + \frac{1}{8} =$ ____________________

3. $\frac{1}{4} + \frac{3}{10} =$ ____________________



Subtract:

1. $\frac{5}{6} - \frac{2}{3} =$ ____________________

2. $\frac{2}{5} - \frac{1}{10} =$ ____________________

3. $\frac{5}{6} - \frac{3}{8} =$ ____________________







Unit (7) Assessment

[A] Choose the correct answer:

(1) $\frac{5}{7}+\frac{3}{14}=$ ....

ⓐ $\frac{2}{7}$ ⓑ $\frac{13}{14}$ ⓒ $\frac{8}{21}$ ⓓ $\frac{8}{14}$

(2) $\frac{2}{5}+\frac{3}{10}=$ ....

ⓐ $\frac{5}{15}$ ⓑ $\frac{7}{10}$ ⓒ $\frac{5}{10}$ ⓓ $\frac{1}{2}$

(3) $\frac{3}{4}-\frac{3}{5}=$ ....

ⓐ 0 ⓑ $\frac{1}{20}$ ⓒ $\frac{3}{20}$ ⓓ $\frac{6}{20}$

(4) $\frac{5}{6}-\frac{3}{5}=$ ....

ⓐ 2 ⓑ $\frac{7}{30}$ ⓒ $\frac{2}{30}$ ⓓ $\frac{2}{25}$

(5) $\frac{5}{8}-\frac{1}{2}=$ ....

ⓐ 1 ⓑ $\frac{2}{3}$ ⓒ $1\frac{1}{8}$ ⓓ $\frac{1}{8}$

(6) $\frac{5}{12}+\frac{1}{6}=$ ....

ⓐ $\frac{3}{12}$ ⓑ $\frac{7}{12}$ ⓒ $\frac{5}{12}$ ⓓ $\frac{1}{12}$

(7) $\frac{6}{16}+\frac{1}{4}=$ ....

ⓐ $\frac{7}{16}$ ⓑ $\frac{7}{20}$ ⓒ $\frac{5}{8}$ ⓓ $\frac{1}{8}$



[B] Complete:

(1) The smallest common denominator of $\frac{1}{3}$ and $\frac{3}{5}$ is ....

(2) $\frac{1}{6}+\frac{11}{12}+\frac{1}{3}=$ ....

(3) $\frac{3}{22}+\frac{8}{11}=$ ....

(4) $\frac{7}{10}-\frac{9}{20}-\frac{1}{5}=$ ....



[C] Write the equivalent fraction to have like denominators:

(1) $\frac{5}{6}$, $\frac{8}{9}$ ....

(2) $\frac{2}{3}$, $\frac{2}{9}$ ....

(3) $\frac{3}{4}$, $\frac{4}{5}$ ....



[D] Story problems:

(1) A baker has $\frac{8}{9}$ kg of flour. He used $\frac{5}{6}$ kg. How much kg of flour was left? ....

(2) Ali has 12 balls 4 of them are blue, 3 are green, 3 are yellow, and the remaining are red. What is the fraction that represents the red balls? ....








UNIT
8

Theme 3 | Fractions, Decimals, and Proportional Relationships

Unit 8
Adding and Subtracting Mixed Numbers

Concept (8-1)

Lesson (1) Adding and Subtracting Mixed Numbers with Like Denominators

Complete the chart by rewriting the given values in two other forms:

	Mixed Number	Equivalent Improper Fraction	Equivalent Mixed Number
1.	$3\frac{1}{3}$	$\frac{.....}{.....}$	$2\frac{.....}{.....}$
2.	$2\frac{5}{8}$	$\frac{.....}{.....}$	$1\frac{.....}{.....}$
3.	$.....\frac{.....}{.....}$	$\frac{28}{5}$	$3\frac{.....}{.....}$
4.	$4\frac{3}{4}$	$\frac{.....}{.....}$	$3\frac{.....}{.....}$
5.	$.....\frac{.....}{.....}$	$\frac{9}{2}$	$2\frac{.....}{.....}$
6.	$.....\frac{.....}{.....}$	$\frac{22}{4}$	$3\frac{.....}{.....}$



Evaluate each sum or difference. Simplify if possible:

a. $2\frac{1}{5} + 3\frac{3}{5}$ ______________________

c. $3\frac{3}{8} + 1\frac{5}{8}$ ______________________

b. $4\frac{2}{3} - 1\frac{1}{3}$ ______________________

d. $5\frac{2}{7} - 3\frac{5}{7}$ ______________________



Solve Each Equation

1. $3\frac{1}{5} + b = 5\frac{3}{5}$ $b =$ ______

2. $c + 4\frac{2}{3} = 5\frac{1}{3}$ $c =$ ______

3. $2\frac{4}{8} - d = 1\frac{1}{8}$ $d =$ ______

4. $f + 1\frac{3}{4} = 7\frac{1}{4}$ $f =$ ______



Lesson (2) Finding Like Denominators of the Mixed Numbers

Rewrite the given mixed numbers with like denominators in two different ways:

	First Rewrite	Second Rewrite
1. $1\frac{3}{4}$ and $1\frac{6}{15}$	A. ______ and ______	B. ______ and ______
2. $3\frac{6}{8}$ and $2\frac{8}{12}$	A. ______ and ______	B. ______ and ______
3. $2\frac{9}{18}$ and $2\frac{14}{24}$	A. ______ and ______	B. ______ and ______



Homework

Evaluate each sum or difference. Simplify if possible:

a. $1\frac{3}{5} + 3\frac{1}{5}$ = ____

b. $2\frac{5}{6} + 2\frac{3}{6}$ = ____

c. $7\frac{1}{6} + 1\frac{3}{6}$ = ____

d. $4\frac{4}{9} + 1\frac{1}{9}$ = ____

e. $8\frac{3}{7} - 8\frac{1}{7}$ = ____

f. $1\frac{2}{3} + 3\frac{2}{3}$ = ____



Solve Each Equation

5. $g - \frac{7}{8} = \frac{6}{8}$ $g =$ ____

6. $2\frac{2}{3} - h = 1$ $h =$ ____

7. $j + 3\frac{3}{4} = 9\frac{2}{4}$ $j =$ ____

8. $8\frac{1}{5} - k = 5\frac{3}{5}$ $k =$ ____



Rewrite the given mixed numbers with like denominators in two different ways:

	First Rewrite	Second Rewrite
4. $3\frac{12}{16}$ and $1\frac{15}{24}$	A. ____ and ____	B. ____ and ____
5. $10\frac{5}{6}$ and $5\frac{15}{27}$	A. ____ and ____	B. ____ and ____



Choose the correct answer:

1. $4\frac{3}{7}+1\frac{5}{7}=$ ....
   A. $5\frac{1}{7}$ B. $6\frac{1}{7}$ C. $5\frac{8}{14}$ D. $6\frac{2}{7}$

2. $5\frac{5}{8}-3\frac{2}{8}=$ ....
   A. $8\frac{2}{8}$ B. $\frac{2}{8}$ C. $2\frac{1}{4}$ D. $2\frac{3}{8}$

3. $1\frac{2}{5}+2\frac{3}{5}=$ ....
   A. 5 B. 6 C. 4 D. $3\frac{5}{10}$

4. If $4\frac{3}{5}+k=6\frac{2}{5}$, then k = ...
   A. $1\frac{4}{5}$ B. 11 C. $2\frac{1}{5}$ D. $1\frac{3}{5}$

5. If $3\frac{4}{7}-x=2\frac{1}{7}$, then x = ...
   A. $\frac{3}{7}$ B. 1 C. $1\frac{5}{7}$ D. $1\frac{3}{7}$

6. $K-2\frac{1}{3}=1\frac{1}{3}$, then K = ...
   A. $3\frac{2}{3}$ B. $3\frac{1}{3}$ C. $1\frac{2}{3}$ D. $2\frac{2}{3}$

7. The fraction $3\frac{2}{5}$ by regrouping is ....
   A. $\frac{15}{5}$ B. $2\frac{7}{5}$ C. $1\frac{7}{5}$ D. $\frac{16}{5}$

8. $9\frac{4}{7}-9\frac{1}{7}=$ ....
   A. 0 B. $9\frac{3}{7}$ C. $\frac{3}{7}$ D. $1\frac{2}{7}$

9. $\frac{19}{5}$ is equivalent to ....
   A. $3\frac{3}{5}$ B. $4\frac{1}{5}$ C. $3\frac{5}{5}$ D. $3\frac{4}{5}$

10. $2\frac{1}{3}$ can be regrouped as ....
   A. $1\frac{4}{3}$ B. $\frac{3}{7}$ C. $1\frac{2}{3}$ D. 7



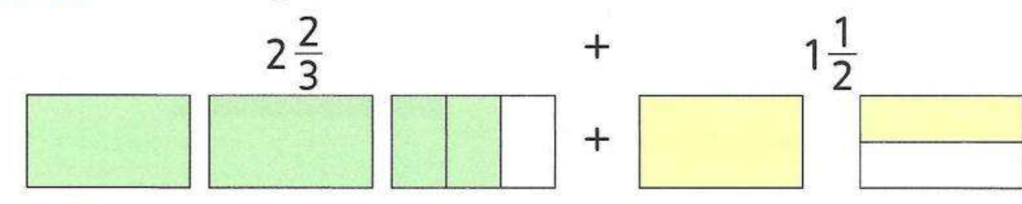
Concept (8-2)

Lesson (3) Using Models to Add and Subtract Mixed Numbers

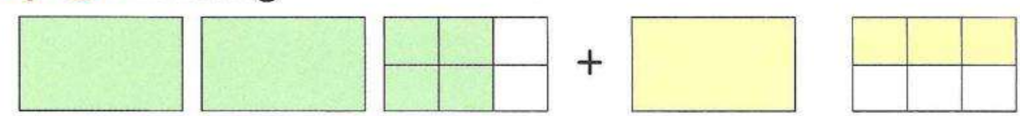
Use an area model to find the sum

$$2\frac{2}{3} + 1\frac{1}{2} = ...$$

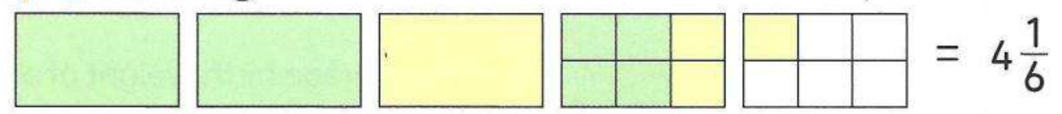
Step 1 : Modeling



Step 2 : Dividing



Step 3 : Adding

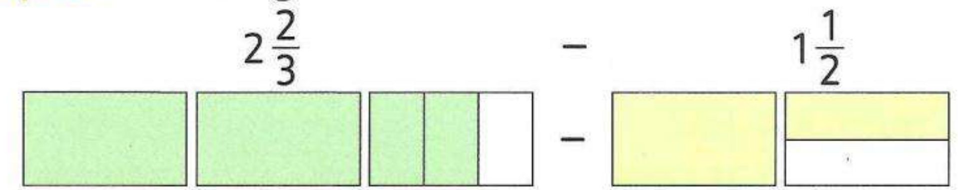




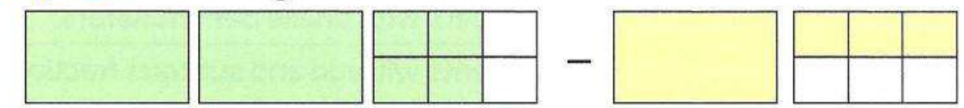
Use an area model to find the difference:

$$2\frac{2}{3} - 1\frac{1}{2} = ...$$

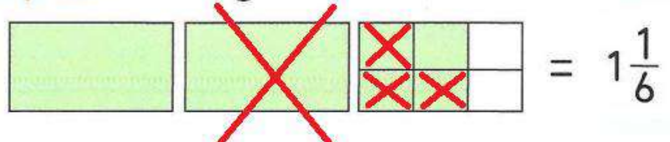
Step 1 : Modeling



Step 2 : Dividing

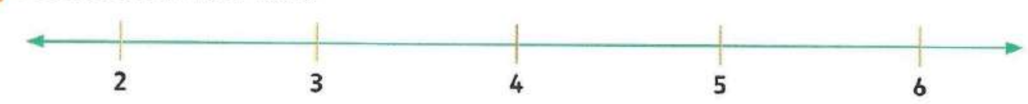


Step 3 : Adding

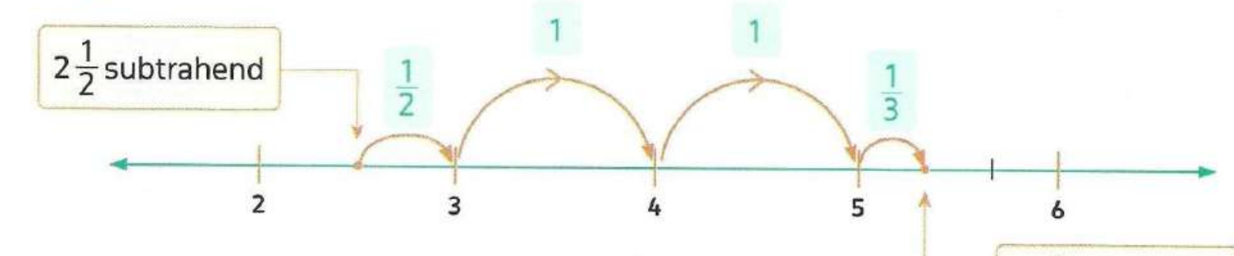


Subtract $5\frac{1}{3} - 2\frac{1}{2}$ using a number line.

Step 1: Draw a number line.



Step 2: Jump from subtrahend to minuend.



Step 3: Add length of jumps.

The difference $= \frac{1}{2} + 1 + 1 + \frac{1}{3} = \frac{3}{6} + 2 + \frac{2}{6} = 2\frac{5}{6}$



Lesson (4) Adding and Subtracting Mixed Numbers

Evaluate then simplify if possible:

a. $3\frac{1}{2} + 2\frac{1}{4}$ ______________________________

b. $3\frac{1}{8} + 2\frac{1}{3}$ ______________________________

c. $2\frac{2}{5} + 1\frac{1}{2}$ ______________________________

d. $6\frac{1}{6} + 7\frac{1}{7}$ ______________________________

e. $9\frac{2}{3} + 8\frac{1}{5}$ ______________________________

f. $6\frac{4}{5} + 4\frac{2}{3}$ ______________________________

g. $2\frac{5}{6} + \frac{8}{9}$ ______________________________

h. $1\frac{2}{5} + \frac{5}{10}$ ______________________________



Evaluate then simplify if possible:

a. $6\frac{2}{3} - 3\frac{1}{4}$ ....

b. $3\frac{3}{6} - 2\frac{1}{3}$ ....

c. $1\frac{4}{7} - \frac{10}{21}$ ....

d. $2 - \frac{3}{4}$ ....

e. $7 - 2\frac{3}{5}$ ....

f. $5\frac{5}{8} - 1\frac{1}{3}$ ....

g. $9\frac{1}{6} - 4\frac{4}{9}$ ....

h. $1\frac{2}{5} - \frac{5}{10}$ ....



Lesson (5) More of Adding and Subtracting Mixed Numbers

Find the missing number using any strategy. Simplify if possible:

a. $a + 5\frac{5}{6} = 9\frac{1}{12}$, $a =$ ....

b. $8\frac{7}{10} - b = 4\frac{9}{20}$, $b =$ ....

c. $9\frac{5}{20} - c = 4\frac{19}{20}$, $c =$ ....

d. $f + 9\frac{1}{4} = 12\frac{15}{16}$, $f =$ ....





Lesson (6) Story Problems with Mixed Numbers

Complete:

a. $5\frac{2}{3}$ minutes = ---------- minutes and ---------- seconds

b. $6\frac{3}{5}$ hours = ---------- hours and ---------- minutes

c. $3\frac{1}{2}$ years = ---------- years and ---------- months

d. 75 seconds = ---------- minute



Choose the correct answer:

a. $1\frac{1}{8}$ days = ---------- hours

A. 24 B. 8 C. 27 D. 18

b. $2\frac{1}{3}$ hours = ---------- minutes

A. 120 B. 150 C. 140 D. 130

c. 36 months = ---------- years

A. $2\frac{1}{2}$ B. $1\frac{1}{2}$ C. 3 D. $3\frac{1}{2}$



Marwa took $2\frac{1}{3}$ hours to paint a table and $1\frac{1}{4}$ hours to paint a chair.

How much time did she take in all ?



Karim walked $2\frac{1}{5}$ km and Sameh walked $1\frac{1}{3}$ km more.

What distance that Sameh walked ?



Homework

Evaluate and simplify if possible:

6. $3\frac{4}{5} + 2\frac{2}{3}$ Evaluate: ______

7. $9\frac{1}{6} - 3\frac{1}{3}$ Evaluate: ______

8. $1\frac{2}{3} - 1\frac{3}{5}$ Evaluate: ______

9. $4\frac{3}{4} + 9\frac{5}{12}$ Evaluate: ______

10. $2\frac{1}{4} + 1\frac{11}{16}$ Evaluate: ______



Find the missing number using any strategy. Simplify if possible:

e. $f + 9\frac{1}{4} = 12\frac{15}{16}$, $f =$ ______

f. $g - 1\frac{3}{4} = 7\frac{3}{44}$, $g =$ ______

g. $4\frac{12}{18} + h = 11$, $h =$ ______

h. $j - 4\frac{7}{8} = 4\frac{37}{40}$, $j =$ ______



Farida bought $2\frac{1}{2}$ kg of tomato, $1\frac{3}{8}$ kg of onion and $5\frac{1}{4}$ kg of potatoes.

How much vegetables did she buy ?

______



A vessel contains $1\frac{1}{2}$ liters of milk. Ahmed drinks $\frac{1}{4}$ liter of milk and Sara drinks $\frac{1}{2}$ liter of milk.

How much of milk is left in the vessel ?

______

______

Unit (8) Assessment

[A] Choose the correct answer:

1. $2\frac{3}{5} + 1\frac{4}{5} =$ ....

A. $3\frac{7}{10}$ B. $4\frac{2}{5}$ C. $1\frac{1}{5}$ D. $2\frac{7}{5}$

2. $5\frac{2}{7} + k = 6\frac{5}{7}$, then k = ...

A. $11\frac{7}{7}$ B. $1\frac{3}{7}$ C. $4\frac{3}{7}$ D. $5\frac{1}{7}$

3. $2\frac{1}{4}$ years = ... months.

A. 27 B. 54 C. 135 D. 180

4. Two fractions $3\frac{2}{3}$ and $5\frac{1}{6}$ with like denominators are ....

A. $3\frac{2}{3}$ and $5\frac{1}{6}$ B. $\frac{11}{3}$ and $\frac{31}{3}$ C. $3\frac{4}{6}$ and $5\frac{1}{6}$ D. $3\frac{2}{3}$ and $5\frac{2}{6}$

5. $2\frac{3}{5} +$ .... $= 3\frac{1}{4}$

A. $\frac{13}{20}$ B. $1\frac{1}{4}$ C. $1\frac{4}{5}$ D. $1\frac{2}{5}$

6. $2\frac{1}{3}$ hours = ... minutes

A. 150 B. 120 C. 130 D. 140

7. $\frac{17}{3}$ is equivalent to ....

A. $3\frac{1}{6}$ B. $7\frac{1}{2}$ C. $3\frac{2}{5}$ D. $5\frac{2}{3}$

[B] Complete:

1. $3\frac{1}{2} - 2\frac{3}{5} =$ ....

2. $g - 1\frac{3}{4} = 7\frac{3}{44}$, then g = ...

3. $7\frac{2}{5} + 1\frac{1}{4} = 8 + 1 + \frac{1}{4} -$ ....

4. $9\frac{1}{4} -$ .... $= 3\frac{3}{4}$

5. $\frac{1}{2}$ year = ... months

6. 150 seconds = ... minutes

7. $X + 5\frac{1}{2} = 7\frac{3}{4}$, then X = ...

8. $2\frac{3}{7}$ as an improper fraction is ....

[C] Choose the correct answer:

1. $1\frac{5}{8} + 2\frac{7}{12} + \frac{1}{4} =$ ....

   A. $3\frac{7}{12}$ B. $4\frac{5}{6}$ C. $4\frac{7}{12}$ D. $4\frac{11}{24}$

2. $2\frac{4}{5} + 1\frac{3}{10} - 1\frac{1}{2} =$ ....

   A. $\frac{6}{5}$ B. $3\frac{2}{5}$ C. $1\frac{7}{10}$ D. $2\frac{3}{5}$

3. $4\frac{3}{5} \neq$ ....

   A. $8\frac{6}{10}$ B. $\frac{23}{5}$ C. $4\frac{6}{10}$ D. $3\frac{8}{5}$

4. If $3\frac{2}{3} - b = 1$, then b = ...

   A. $3\frac{2}{3}$ B. $2\frac{2}{3}$ C. $\frac{2}{3}$ D. 2

5. The fraction $2\frac{1}{4}$ by regrouping is ....

   A. $2\frac{5}{4}$ B. $1\frac{5}{4}$ C. $1\frac{2}{4}$ D. $\frac{5}{4}$

6. $4\frac{5}{6} - 2\frac{1}{12} =$ ....

   A. $2\frac{3}{4}$ B. $3\frac{4}{3}$ C. $5\frac{5}{4}$ D. $2\frac{2}{7}$

7. $5\frac{1}{4} -$ .... $= 3\frac{1}{2}$

   A. $\frac{3}{4}$ B. $1\frac{3}{4}$ C. $4\frac{3}{4}$ D. $8\frac{3}{4}$

[D] Answer the following:

1. Marwan studied Math for $2\frac{1}{2}$ hours and Science for 90 minutes.
   How many hours did Marwan study in all ?

   ....

2. Sameh ate $1\frac{3}{4}$ kg of fruits, Bassem ate $\frac{1}{5}$ kg more than Sameh and Wael ate $\frac{1}{2}$ kg less than Sameh.
   How many kg of fruits did the three friends eat together ?

   ....

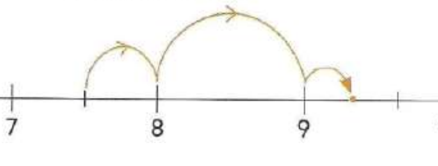
3. **Use an area model to add.**

   $2\frac{3}{5} + 1\frac{1}{2} =$ ....

      + 

4. **Use a number line to find the difference.**

   $9\frac{1}{3} - 7\frac{1}{2} =$ ....






UNIT 9

Theme 3 | Fractions, Decimals, and Proportional Relationships

Unit 9
Multiplying and Dividing Fractions

Photo Credit: Zevana / Shutterstock.com

Concept (9-1)

Lesson (1) Multiplying a Fraction or a Mixed by a Whole

Multiply, and then write the result in its simplest form:

a. $\frac{1}{3} \times 5 =$ ....

b. $4 \times \frac{1}{4} =$ ....

c. $\frac{2}{7} \times 21 =$ ....

d. $\frac{3}{5} \times 15 =$ ....

e. $9 \times \frac{5}{6} =$ ....

f. $\frac{1}{25} \times 10 =$ ....

g. $2\frac{3}{8} \times 4 =$ ....

h. $5\frac{1}{4} \times 8 =$ ....

i. $2\frac{2}{5} \times 10 =$ ....

j. $2\frac{1}{5} \times 10 =$ ....



As a caretaker, Ezz walks the perimeter of the garden 3 days per week. The perimeter of the garden is $2\frac{1}{5}$ kilometers. **What is the total distance Ezz walks each week ?**



Ezz notices that $\frac{2}{3}$ of the 6 rose bushes are in bloom. **How many rose bushes are in bloom ?**



Complete:

a. $\frac{4}{11} \times$ .... $= \frac{4}{11} + \frac{4}{11} + \frac{4}{11} + \frac{4}{11}$

b. If $2\frac{1}{7} = \frac{x}{7}$, then $x =$ ....

c. $2\frac{1}{5} \times 2 =$ ....

d. $\frac{2}{3}$ of $9 =$ ....

e. $1\frac{2}{7} \times 3 = 1 \times 3 +$ .... $\times$ ....

f. $7\frac{2}{3} \times 4 =$ .... $\times$ .... $+ \frac{2}{3} \times 4$

g. If $2\frac{1}{4} \times 8 = [\frac{1}{4} \times b] + [2 \times 8]$, then $b =$ ....

h. $2\frac{1}{2} \times 5 = [$ .... $\times 5] + [\frac{1}{2} \times 5]$

i. $\frac{5}{3} \times 6 \times \frac{2}{7} =$ ....

j. $\frac{2}{5} \times 20 \times \frac{3}{4} =$ ....

k. $2\frac{4}{5} \times 3 = 3 \times \frac{\cdots}{\cdots}$

l. $5 \times 3\frac{2}{11} = \frac{\cdots}{\cdots} \times 5$

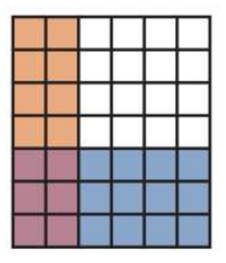
m. If $a \times \frac{3}{17} = \frac{3}{17}$, then $a =$ ....

n. If $\frac{7}{8} \times 12 = \frac{14}{8} \times x$, then $x =$ ....

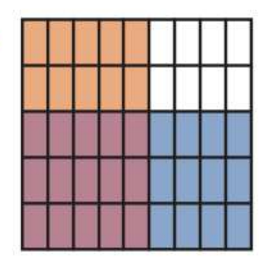


Lesson (2) Multiplying Fractions Using Models

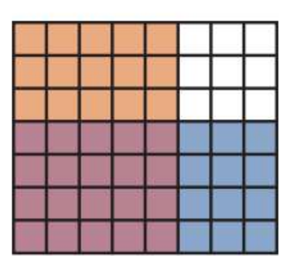
Missing Numbers Study the multiplication area models and fill in the missing fraction. Then, enter the product. Simplify your answers, if possible.

1. 

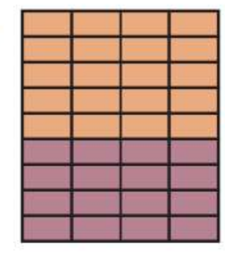
$\frac{2}{6} \times$ ________ = ________

2. 

________ $\times \frac{3}{5} =$ ________

3. 

$\frac{5}{8} \times$ ________ = ________

4. 

________ $\times \frac{4}{9} =$ ________



Lesson (3) Multiplying Fraction by Fraction

1. $\frac{1}{2} \times \frac{1}{5} =$ ________
2. $\frac{5}{6} \times \frac{2}{5} =$ ________
3. $\frac{3}{5} \times \frac{1}{4} =$ ________
4. $\frac{1}{3} \times \frac{3}{8} =$ ________
5. $\frac{3}{4} \times \frac{1}{2} =$ ________
6. $\frac{3}{6} \times \frac{5}{6} =$ ________
7. $\frac{3}{4} \times \frac{3}{8} =$ ________
8. $\frac{5}{8} \times \frac{3}{3} =$ ________

Let's Multiply Find the product. Simply your answers, if possible.

1. $\frac{1}{2} \times \frac{2}{8} =$ ____________

4. $\frac{1}{4} \times \frac{1}{4} =$ ____________

2. $\frac{1}{3} \times \frac{2}{7} =$ ____________

5. $\frac{5}{10} \times \frac{8}{10} =$ ____________

3. $\frac{3}{9} \times \frac{3}{4} =$ ____________



Homework

Make It Simpler Write each product in its simplest form.

1. $\frac{3}{8} \times \frac{1}{6} =$ ____________

2. $\frac{1}{4} \times \frac{8}{11} =$ ____________

3. $\frac{4}{5} \times \frac{4}{9} =$ ____________

4. $\frac{5}{12} \times \frac{3}{5} =$ ____________

5. $\frac{5}{8} \times \frac{2}{15} =$ ____________



Choose the correct answer:

1. $\frac{2}{15} \times \frac{5}{6} =$ ______

   A. $\frac{1}{3}$ B. $\frac{1}{6}$ C. $\frac{1}{8}$ D. $\frac{1}{9}$

2. $\frac{2}{3} \times \frac{1}{2} =$ ______

   A. $\frac{1}{3}$ B. $\frac{3}{5}$ C. $\frac{1}{2}$ D. 1

3. $\frac{3}{5} \times \frac{5}{7}$ ☐ $\frac{3}{7}$

   A. > B. < C. =

4. What is the product of $\frac{4}{5}$ and $\frac{3}{3}$?

   A. $\frac{4}{5}$ B. $\frac{7}{8}$ C. 1 D. $\frac{4}{15}$

5. $0.25 \times \frac{8}{9} =$ ______

   A. $\frac{1}{4}$ B. $\frac{2}{3}$ C. $\frac{4}{9}$ D. $\frac{2}{9}$

6. $2 \times \frac{__}{7} = \frac{6}{7}$

   A. 2 B. 3 C. 4 D. 1

7. $\frac{2}{3} \times \frac{3}{8} \times \frac{8}{9} =$ ______

   A. $\frac{1}{3}$ B. $\frac{2}{9}$ C. $\frac{13}{20}$ D. $\frac{2}{17}$

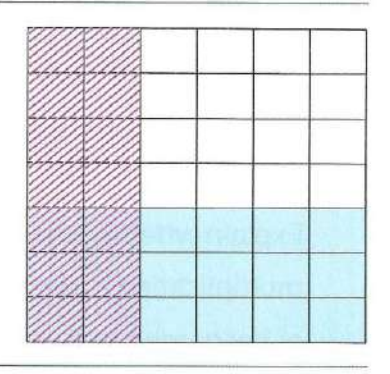
8. ______ $\times \frac{3}{7} = \frac{2}{7}$

   A. $\frac{2}{3}$ B. $\frac{3}{2}$ C. $\frac{1}{7}$ D. $\frac{5}{7}$

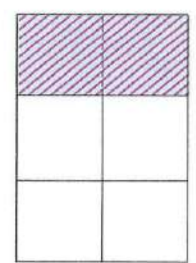
9. Study the multiplication area model and fill the missing fraction $\frac{2}{6} \times$ ______

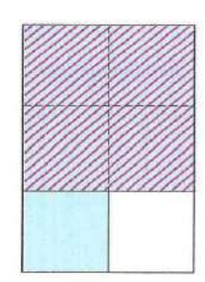
   A. $\frac{3}{6}$ B. 3

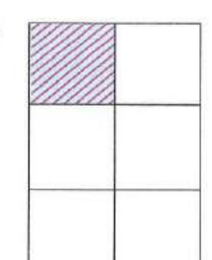
   C. $\frac{3}{7}$ D. $\frac{6}{7}$

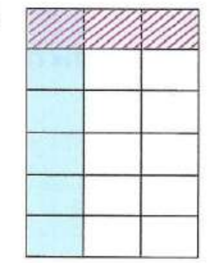


10. Which of the models below shows $\frac{1}{6} \times \frac{1}{3}$? ______

A. 

B. 

C. 

D. 

Lesson (4) Multiplying Fractions and Mixed Numbers

Evaluate each product using the distribution property of multiplication:

a. $3\frac{4}{6} \times \frac{1}{4}$ = ...

b. $2\frac{2}{5} \times \frac{2}{3}$ = ...

c. $5\frac{1}{4} \times \frac{1}{2}$ = ...



Lesson (5) Multiplying Mixed Numbers Using Improper Fractions

Match:

	Mixed Number	Improper Fraction
a.	$3\frac{1}{2}$	$\frac{31}{5}$
b.	$4\frac{3}{5}$	$\frac{7}{2}$
c.	$2\frac{1}{5}$	$\frac{4}{3}$
d.	$6\frac{1}{5}$	$\frac{11}{5}$
e.	$5\frac{1}{2}$	$\frac{13}{5}$
f.	$2\frac{3}{5}$	$\frac{8}{3}$
g.	$1\frac{1}{3}$	$\frac{23}{5}$
h.	$2\frac{2}{3}$	$\frac{11}{2}$

Rewrite the mixed numbers as improper fractions. Then, simplify before you multiply. Be sure to simplify your answers.

1. $2\frac{1}{4} \times 2\frac{2}{3} =$ ________

2. $1\frac{4}{6} \times 4\frac{2}{5} =$ ________

3. $3\frac{1}{2} \times 1\frac{3}{7} =$ ________

4. $4\frac{2}{7} \times 2\frac{1}{3} =$ ________



Lesson (6) Story Problems on Multiplying Fractions and Mixed

Ola and Omina were planting flowers in their garden. Ola had 2 bags of flower seeds, but Omina had only $\frac{3}{4}$ of a bag of seeds. Each girl planted $\frac{1}{2}$ of the seeds she had. **How many bags of seeds did they plant altogether ?**


Planting Seeds



Ayman is taking inventory of his landscaping supplies. He has $2\frac{2}{3}$ bags of fertilizer. Each bag weighs $7\frac{1}{2}$ kilograms. He writes that there are $21\frac{3}{8}$ kg of fertilizer in all. **Is Ayman correct ? Explain your thinking.**


Fertilizer

Homework

Evaluate each product using the distribution property of multiplication:

a. $\frac{3}{4} \times 2\frac{1}{5}$ = ...

b. $\frac{1}{8} \times 3\frac{2}{5}$ = ...

c. $2\frac{4}{7} \times \frac{5}{8}$ = ...



Rewrite the mixed numbers as improper fractions. Then, simplify before you multiply. Be sure to simplify your answers.

1. $1\frac{1}{3} \times \frac{3}{8} =$ ____________

2. $3\frac{1}{3} \times 5\frac{2}{5} =$ ____________

3. $6\frac{2}{7} \times 2\frac{6}{11} =$ ____________

4. $11\frac{1}{5} \times 4\frac{3}{8} =$ ____________



Aya purchased a bag of tomatoes from the market that has a mass of $2\frac{1}{3}$ kilograms. Her brother, Ameen, purchased a bag of potatoes that has a mass $1\frac{1}{2}$ times more than Aya's bag of tomatoes. **What is the mass of Ameen's bag of potatoes ?**

____





Nada is making spaghetti sauce.

The recipe calls for $1\frac{3}{4}$ cups of water,

she wants to make $4\frac{1}{2}$ times th recipe.

How much water should she use ?





Moustafa is harvesting sugarcane.

He can harvest $3\frac{3}{4}$ kilograms of sugarcane

in 1 hour. If he plans to work for $2\frac{1}{2}$ hours,

How much sugarcane will he harvest ?


sugarcane



Seif bought 4 bags of soil for his garden.

Each bag has a mass of $3\frac{1}{3}$ kilograms. If he only used $3\frac{3}{4}$ bags of soil,

How many kilograms did he use ?





Concept (9-2)

Lesson (7) Convert Improper Fraction to Mixed Number

Complete:

a. $16 \div 7 = 2 \frac{\ldots}{7}$

b. The quotient of $8 \div 5 =$ ....

c. $17 \div 5 =$ .... [as a mixed number]

d. $34 \div 5 = 6 +$ ....

e. Nora divides 6 hours equally to study 4 subjects, then the number of hours for each subject is .... hours.



Expression	Quotient
$6 \div 5$	$\frac{6}{5} = 1\frac{1}{5}$
$8 \div 5$	
$4 \div 3$	
$5 \div 4$	



Divide 3 pizzas among 5 persons equally, what is the share of each person?

....







If you want to distribute 22 liters of oil in 6 small bottles equally, find the volume of oil in each bottles?

....





Lesson (8) Dividing Unit Fractions by Whole Numbers

1. $\frac{1}{3} \div 5 =$ ______________________

2. $\frac{1}{2} \div 3 =$ ______________________

3. $\frac{1}{3} \div 2 =$ ______________________

4. $\frac{1}{3} \div 4 =$ ______________________



Write the missing number in each equation:

1.	$\frac{1}{3} \div a = \frac{1}{12}$	$\frac{1}{3} \times b = \frac{1}{12}$	$a =$ ________	$b =$ ________
2.	$\frac{1}{4} \div c = \frac{1}{20}$	$\frac{1}{4} \times d = \frac{1}{20}$	$c =$ ________	$d =$ ________
3.	$\frac{1}{5} \div e = \frac{1}{30}$	$\frac{1}{5} \times f = \frac{1}{30}$	$e =$ ________	$f =$ ________
4.	$\frac{1}{8} \div g = \frac{1}{24}$	$\frac{1}{8} \times h = \frac{1}{24}$	$g =$ ________	$h =$ ________

Lesson (9) Dividing Whole Numbers by Unit Fractions

Find the missing value that makes each statement true:

1. $\frac{1}{3} \times$ ____ $= 1$

2. $\frac{1}{3} \times$ ____ $= 2$

3. $\frac{1}{3} \times$ ____ $= 3$

4. $\frac{1}{4} \times$ ____ $= 1$

5. $\frac{1}{4} \times$ ____ $= 2$

6. $\frac{1}{4} \times$ ____ $= 3$



Find the quotient:

1. $4 \div \frac{1}{3}$
2. $3 \div \frac{1}{5}$
3. $5 \div \frac{1}{2}$
4. $2 \div \frac{1}{4}$
5. $3 \div \frac{1}{4}$
6. $4 \div \frac{1}{5}$
7. $8 \div \frac{1}{2}$
8. $6 \div \frac{1}{3}$



Write the missing number in each equation:

1. $5 \div a = 15$ $5 \times b = 15$ $a =$ ______ $b =$ ______
2. $8 \div c = 32$ $8 \times d = 32$ $c =$ ______ $d =$ ______
3. $3 \times f = 6$ $3 \div g = 6$ $f =$ ______ $g =$ ______
4. $6 \div h = 30$ $6 \times j = 30$ $h =$ ______ $j =$ ______



Lesson (10) Story Problems Involving Division of a Whole by a Unit

1. If a turtle can crawl $\frac{1}{2}$ kilometers per hour, how many hours would it take for the turtle to travel 8 km?

   Choose: $\frac{1}{2} \div 8$ or $8 \div \frac{1}{2}$



2. A teacher wants to give $\frac{1}{8}$ of a box of pencils to each student. She has 5 boxes of pencils. To how many students will she be able to give pencils?

   Choose: $\frac{1}{8} \div 5$ or $5 \div \frac{1}{8}$

3. Abdallah has 3 identical gifts to wrap. He uses $\frac{1}{2}$ of a roll of paper to wrap the gifts. If each gift uses the same amount of paper, how much paper did Abdallah use for each gift?

Choose: $\frac{1}{2} \div 3$ or $3 \div \frac{1}{2}$



Homework

Choose the correct answer:

1. $12 \div 5$ equals each of the following except ______

A. $\frac{5}{12}$ B. $\frac{12}{5}$
C. $2\frac{2}{5}$ D. $2 + \frac{2}{5}$

2. The missing fraction on the opposite division algorithm is ______

$$5 \overline{)14} \quad 2\frac{\ }{\ }$$
$$-10$$
$$4$$

A. $\frac{4}{14}$ B. $\frac{4}{5}$
C. $\frac{5}{4}$ D. $\frac{7}{2}$

3. If we divide 7 oranges among 5 persons, then each person has ______ orange.

A. $\frac{5}{7}$ B. $1\frac{1}{5}$
C. $2\frac{1}{5}$ D. $1\frac{2}{5}$

4. $6\frac{1}{2} =$ ______ $\div 2$

A. 11 B. 12
C. 13 D. 14

5. All the following expressions equal each other except ______

A. $22 \div 7$ B. $7 \div 22$
C. $3\frac{1}{7}$ D. $\frac{22}{7}$

6. If Sandy bought 5 kg of meat and wanted to divided it into 4 equally meals, then the number of kilograms in each meal = ______ kg

A. $1\frac{1}{2}$ B. $1\frac{1}{4}$
C. $1\frac{3}{4}$ D. $1\frac{1}{8}$

7. $12 \div 8 = 1\frac{1}{\ }$

A. 2 B. 3
C. 4 D. 5

8. $14 \div 5 =$ ______ $+ 2$

A. $\frac{2}{5}$ B. $\frac{3}{5}$
C. $\frac{4}{5}$ D. $\frac{1}{5}$



Shehab has 6 houseplants. It took him 45 minutes to replant them. **How long did it take him to replant each one?**

____



The flower shop received 8 equal-sized bundles of chrysanthemums and 10 vases. If the bundles are divided equally among 10 vases, **what part of a bundle will each vase get?**

____



5. $\frac{1}{2} \div 7 =$ ______________________________

6. $\frac{1}{8} \div 2 =$ ______________________________

7. $\frac{1}{6} \div 3 =$ ______________________________

8. $\frac{1}{5} \div 5 =$ ______________________________



Write the missing number in each equation:

5. $\frac{1}{2} \times j = \frac{1}{14}$ $\frac{1}{2} \div k = \frac{1}{14}$ $j =$ __________ $k =$ __________

6. $\frac{1}{7} \times m = \frac{1}{21}$ $\frac{1}{7} \div n = \frac{1}{21}$ $m =$ __________ $n =$ __________

7. $\frac{1}{6} \div p = \frac{1}{12}$ $\frac{1}{6} \times q = \frac{1}{12}$ $p =$ __________ $q =$ __________

8. $\frac{1}{10} \times r = \frac{1}{40}$ $\frac{1}{10} \div s = \frac{1}{40}$ $r =$ __________ $s =$ __________

Write the missing number in each equation:

5. $8 \times k = 24$ $8 \div m = 24$ $k =$ ______ $m =$ ______

6. $7 \div n = 35$ $7 \times p = 35$ $n =$ ______ $p =$ ______

7. $3 \times q = 57$ $3 \div r = 57$ $q =$ ______ $r =$ ______

8. $9 \div s = 126$ $9 \times t = 126$ $s =$ ______ $t =$ ______



4. Afaf and Adel pulled up weeds in $\frac{1}{6}$ of the garden's area. If they divided the weeding equally, what total area of the garden did Afaf weed?

Choose: $\frac{1}{6} \div 2$ or $2 \div \frac{1}{6}$



5. A toddler eats $\frac{1}{3}$ of a piece of bread each day for breakfast. If the loaf of bread contains 12 pieces, how many days of breakfast will the loaf of bread provide?

Choose: $\frac{1}{3} \div 12$ or $12 \div \frac{1}{3}$



6. A computer takes $\frac{1}{200}$ of a second to complete a math problem. How many math problems can the computer answer in 120 seconds?

Choose: $\frac{1}{200} \div 120$ or $120 \div \frac{1}{200}$



Answer the following questions.

a. How many halves are there in 7 ?

c. How many quarters are there in 6 ?

b. How many fifths are there in 8 ?

d. How many sixths are there in 10 ?

Unit (9) Assessment

[1] Choose the correct answer:

a. $5 \times \frac{3}{7}$ ◯ $4\frac{3}{7}$

A. < B. > C. =

b. $\frac{1}{3}$ of 12 = ...

A. 4 B. 3 C. 12 D. 8

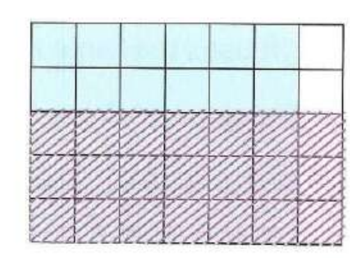
c. How many fifths are there in 7 ?

A. $5 \div 7$ B. 5×7 C. $5 + 7$ D. $7 - 5$

d. $0.25 \times \frac{6}{7} =$ ....

A. $\frac{1}{14}$ B. $\frac{1}{7}$ C. $\frac{3}{14}$ D. $\frac{2}{7}$

e. The opposite model represents ....



A. $\frac{2}{5} \times \frac{7}{6}$ B. $\frac{2}{7} \times \frac{5}{6}$

C. $\frac{2}{5} \times \frac{3}{7}$ D. $\frac{3}{5} \times \frac{6}{7}$

f. $2\frac{2}{3} \times \frac{3}{7} =$ ....

A. $\frac{3}{7}$ B. $\frac{5}{7}$ C. $\frac{5}{21}$ D. $\frac{8}{7}$

g. $7 \div \frac{1}{4} =$ ....

A. 28 B. $\frac{1}{28}$ C. $\frac{4}{7}$ D. $\frac{7}{4}$

[2] Complete:

a. $\frac{3}{\ldots} \times \frac{5}{8} = \frac{15}{56}$

b. $5 \div b = 15$, then b = ...

c. $1\frac{3}{7} \times$ .... = 1

d. $34 \div 5 = 6 +$ ....

e. $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \frac{5}{6} \times \frac{6}{7} =$ ....

f. If $\frac{1}{3} \div a = \frac{1}{12}$, then a = ...

g. $\frac{1}{3} \div 3 =$ ....

h. $2\frac{1}{5} \times 2 =$ ....

[3] Choose the correct answer:

a. If $\frac{1}{3} \div a = \frac{1}{12}$, then a = ________

A. 4 B. $\frac{1}{4}$ C. $\frac{4}{3}$ D. 36

b. If $\frac{6}{23} \times a = \left(\frac{6}{23} \times 2\right) + \left(\frac{6}{23} \times \frac{1}{2}\right)$, then a = ________

A. $1\frac{1}{2}$ B. 2 C. $2\frac{1}{2}$ D. 3

c. If $8 \div a = 40$, then a = ________

A. 5 B. $\frac{1}{5}$ C. $\frac{9}{40}$ D. 40

d. $5 \times \frac{1}{5}$ ◯ $5 \div \frac{1}{5}$

A. < B. = C. >

e. $2\frac{1}{3} \times 1\frac{2}{7} =$ ________

A. 3 B. 4 C. 5 D. $2\frac{3}{21}$

f. $\frac{1}{4} \times m = \frac{1}{20}$, then m = ________

A. 5 B. $\frac{1}{5}$ C. 10 D. $\frac{1}{10}$

g. $\frac{5}{3} \times 21 \times \frac{2}{7} =$ ________

A. $\frac{24}{35}$ B. $\frac{21}{21}$ C. 1 D. 10



[4] Answer the following:

a. Sandy eats $\frac{1}{3}$ of a piece of bread each day for breakfast.
If the loaf of bread contains 9 pieces.
How many days of breakfast will the loaf of bread provide ?



b. Mariam is reading a chapter book. She can usually read $7\frac{1}{3}$ pages in one hour. If she plans to read for two hours and 15 minutes.
How many pages will she read ?



c. A teacher wants to give $\frac{1}{4}$ of a box pencils to each student. He has 6 boxes of pencils.
To how many students will he be able to give pencils ?






UNIT
10

Theme 4 | Applications of Geometry and Measurement

Unit 10
Two-Dimensional Plane Figures and Coordinate Planes

Photo Credit: Viktoriya / Shutterstock.com



Concept (10-1)

Lesson (1) Classifying of Geometric Shapes

Sketch a quick image representing each of the given vocabulary term:

Parallel lines	Intersecting lines	Perpendicular lines	Acute angle
Obtuse angle	Right angle	Straight angle	A shape with a line of symmetry
A ray	A polygon	A quadrilateral	A parallelogram



Quadrilateral (4-sided polygon)

Trapezoid
Exactly 1-pair of parallel sides

Parallelogram
2 pairs of parallel sides opposite each other

Kite
2 pairs of adjacent sides that are congruent

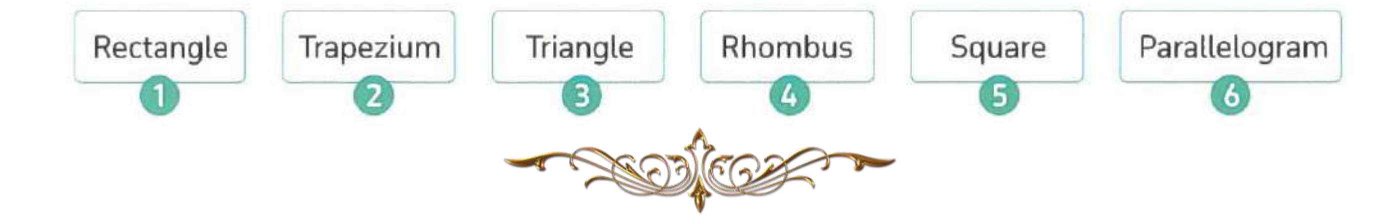
Rectangle
4 right angles

Rhombus
2 acute angles and 2 obtuse with four congruent sides

Square
4 right angles
4 congruent sides

1. Join each figure to its name.

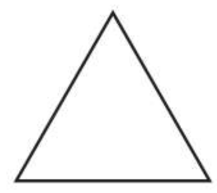
a. b. c. d. e.

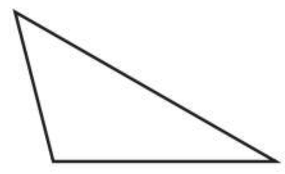


Rectangle	Trapezium	Triangle	Rhombus	Square	Parallelogram
1	2	3	4	5	6

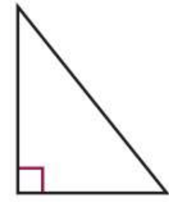
Lesson (2) Tricky Triangles

Label each triangle. In each angle, place A for acute, O for obtuse and R for right:

1. 

2. 

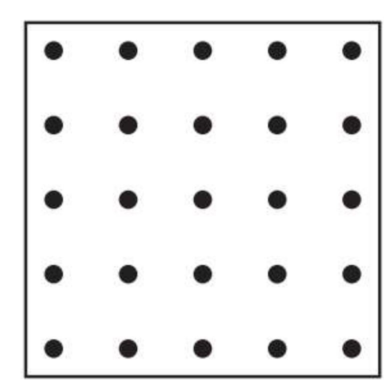
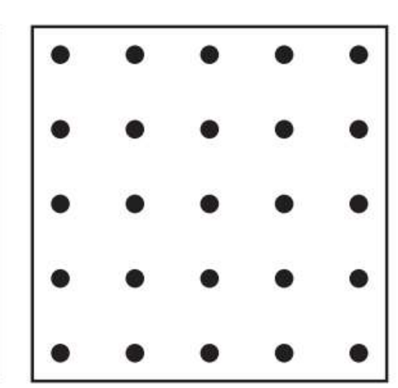
3. 

4. 

Using the dot paper, can you draw?

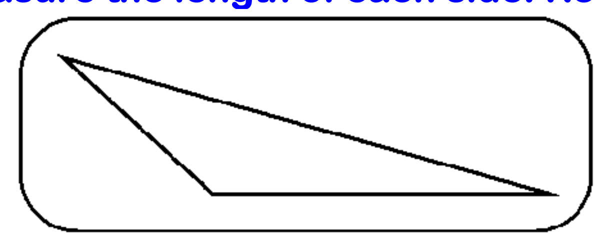
1- A triangle with two right angles?

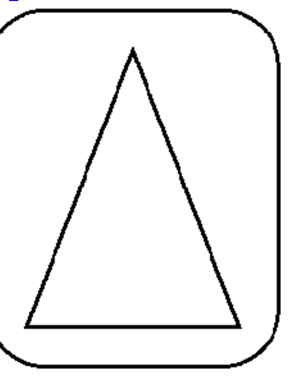
2- A triangle with two obtuse angles?

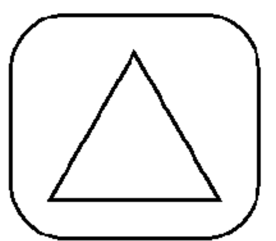
 

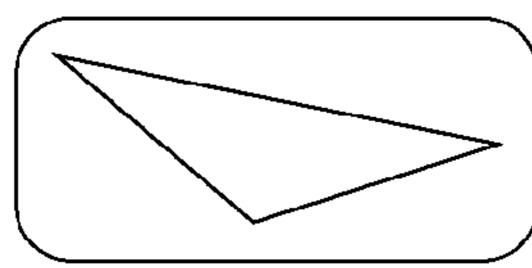


Measure the length of each side. Record your measurements in cm:

1. 

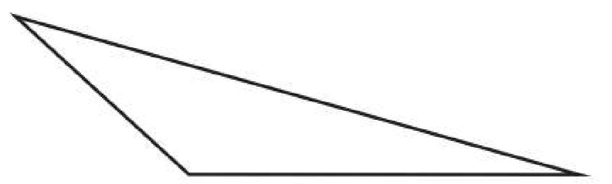
3. 

2. 

4. 

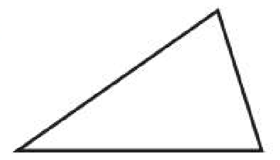


Select the best name for each triangle based on its properties:

1. 

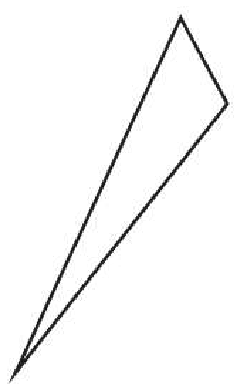
Which two types of triangles are shown?

A. scalene triangle
B. isosceles triangle
C. equilateral triangle
D. right triangle
E. acute triangle
F. obtuse triangle

2. 

Which two types of triangles are shown?

A. scalene triangle
B. isosceles triangle
C. equilateral triangle
D. right triangle
E. acute triangle
F. obtuse triangle

3. 

Which two types of triangles are shown?

A. scalene triangle
B. isosceles triangle
C. equilateral triangle
D. right triangle
E. acute triangle
F. obtuse triangle

Determine the type of each of the following triangles given the measures of their angles.

a. m (∠E) = 30° , m (∠F) = 90° and m (∠G) = 60° " .... -angled triangle"

b. m (∠I) = 30° , m (∠J) = 40° and m (∠K) = 110° " .... -angled triangle"

c. m (∠S) = 51° , m (∠T) = 67° and m (∠U) = 62° " .... -angled triangle"

d. m (∠L) = 32° , m (∠N) = 58° and m (∠M) = 90° " .... -angled triangle"

e. m (∠X) = 46° , m (∠Y) = 38° and m (∠Z) = 96° " .... -angled triangle"

f. m (∠H) = m (∠B) = 70° and m (∠A) = 40° " .... -angled triangle"

g. m (∠A) = m (∠B) = 45° and ∠C is a right angle. " .... -angled triangle"



Determine the type of the triangles according to their side lengths using the following data.

a. AB = 6.5 cm , BC = 7 cm and CA = 6.5 cm " .... triangle"

b. XY = 4.5 cm , YZ = 8 cm and ZX = 5.5 cm " .... triangle"

c. NO = 4.5 cm , OR = 4.5 cm and RN = 4.5 cm " .... triangle"

d. MA = AY = 9 cm and YM = 10 cm " .... triangle"

e. AM = 10 cm , MR = 7 cm and RA = $\frac{1}{2}$ AM " .... triangle"



Homework

Write the name that best describes each figure.

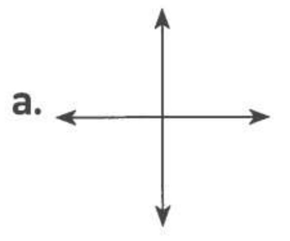
a.	b.	c. ....
d.	e.	f. ....

1. Write the type of each angle.

a. ________ b. ________ c. ________

2. Write the relation between 2- straight lines.

a.



____

b. ________

c. ________



Choose the correct answer:

1. The measure of right angle = ________ °

A. 40 B. 60 C. 120 D. 90

2. The measure of an acute angle ◯ the measure of an obtuse angle.

A. < B. > C. =

3. The pentagon has ________ side(s).

A. 1 B. 2 C. 3 D. 5

4. The polygon which has four sides is called ________

A. triangle B. hexagon C. pentagon D. quadrilateral

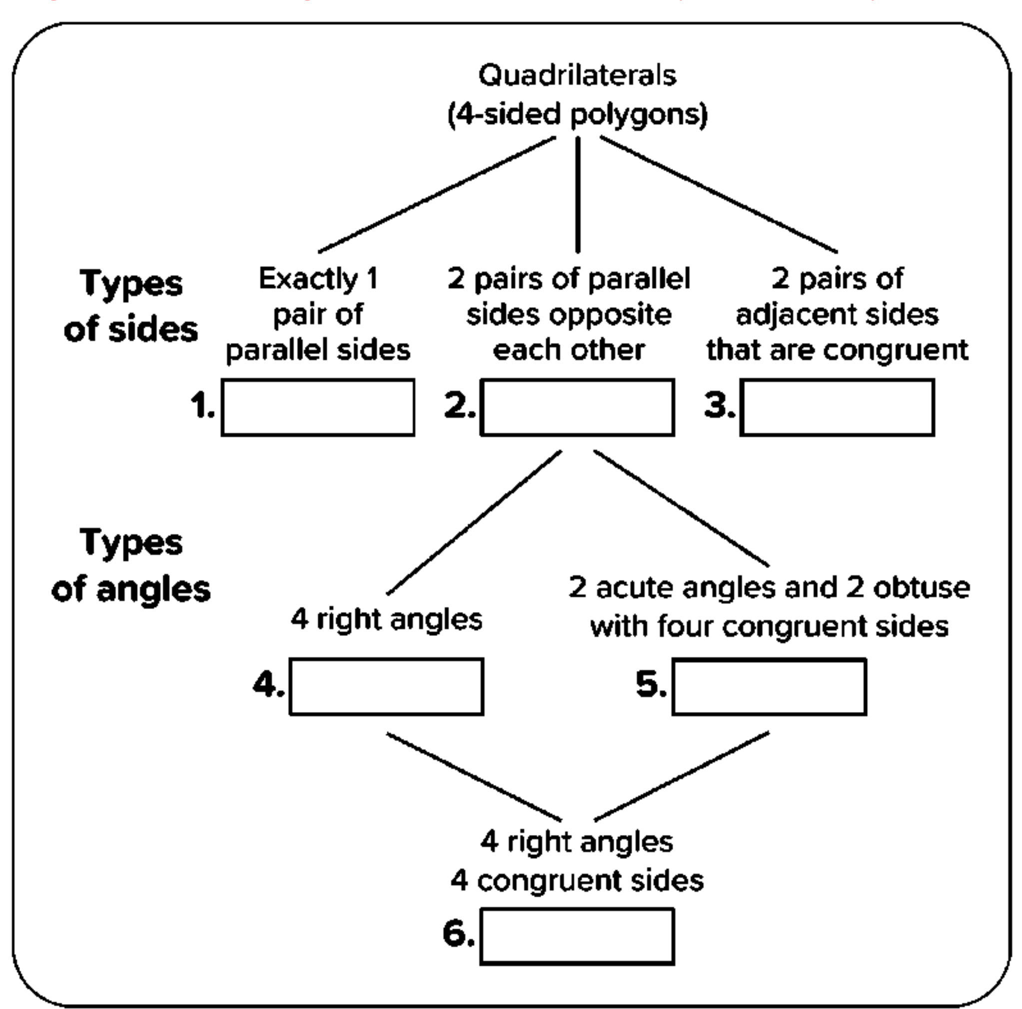
5. The square has ________ axes of symmetry.

A. 1 B. 2 C. 3 D. 4



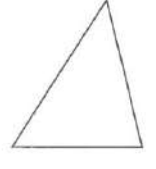
Use the list of quadrilaterals to fill in the chart:

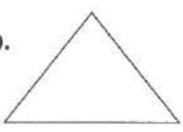
Rectangle – Parallelogram – Rhombus – Square – Trapezium – Kite

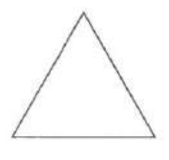




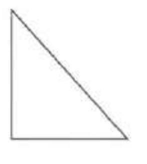
1. Classify each triangle as equilateral, isosceles, or scalene.

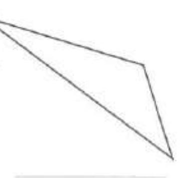
a.  ______

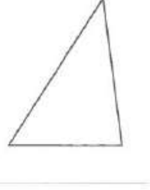
b.  ______

c.  ______

2. Classify each triangle as acute, right, or obtuse.

a.  ______

b.  ______

c.  ______



Choose the correct answer:

1. If the side lengths of a triangle are different, then the triangle is called ________ triangle.
   A. equilateral   B. isosceles   C. scalene

2. The triangle whose side lengths are 7 cm, 4 cm and 7 cm is called ________ triangle.
   A. equilateral   B. isosceles   C. scalene

3. The triangle whose side lengths are 8 cm, 6 cm and ________ cm is called scalene triangle.
   A. 8   B. 6   C. 7

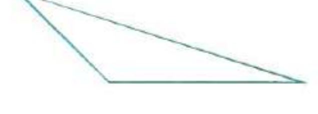
4. 50°, 70° and 60° are the measures of the angles of ________ triangle.
   A. an obtuse-angled   B. a right-angled   C. an acute-angled

5. The triangle whose side lengths are ________ is an equilateral triangle.
   A. 7 cm, 6 cm, 7 cm   B. 5 cm, 5 cm, 5 cm
   C. 5 cm, 6 cm, 7 cm   D. 3 cm, 4 cm, 4 cm

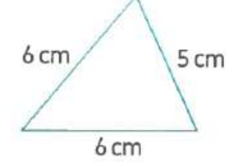
6. The triangle whose measures of angles are 40°, 50° and ________ is right-angled triangle.
   A. 50°   B. 40°   C. 90°   D. 180°

7. The triangle whose measures of angles are ________ is an obtuse-angled triangle.
   A. 30°, 100°, 50°   B. 30°, 60°, 90°   C. 70°, 80°, 30°   D. 50°, 80°, 50°

8. The opposite triangle is ________
   A. acute   B. right
   C. obtuse   D. equilateral



9. The opposite triangle is ________
   A. equilateral   B. isosceles
   C. scalene   D. obtuse

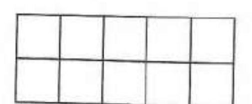


10. I am a triangle with only 2 equal sides, the measure of one of my angles is greater than 90°. What kind of triangle am I?
   A. isosceles, right   B. isosceles, obtuse   C. scalene, obtuse   D. isosceles, acute

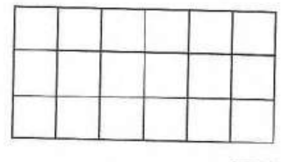


Lesson (3) Calculating Area with Fractional Dimensions

Find the area of the following rectangles.

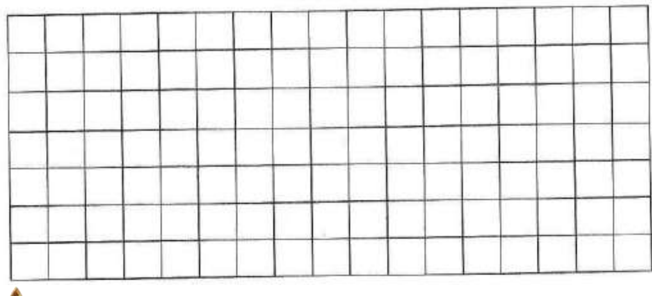


Area = ________ □



Area = ________ □

Draw a rectangle with an area of 12 square units.





Lesson (4) Applying the Area Formula

Find area of the following rectangles.

a. $\frac{4}{5}$ m, $\frac{1}{3}$ m

Area = ________

____

b. $4\frac{2}{3}$ km, $3\frac{3}{7}$ km

Area = ________

____

c. 8 cm, $5\frac{1}{4}$ cm

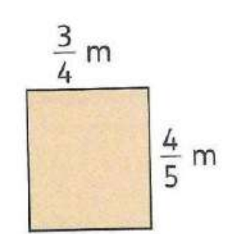
Area = ________

____



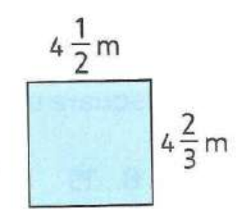
What is the area of the rectangle shown ?

____





Mostafa draw the opposite rectangle.
Calculate the area of Mostafa's rectangle.



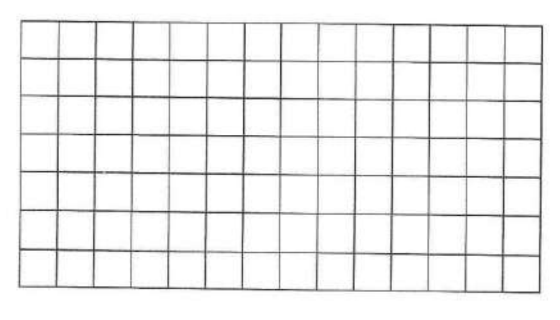


Homework

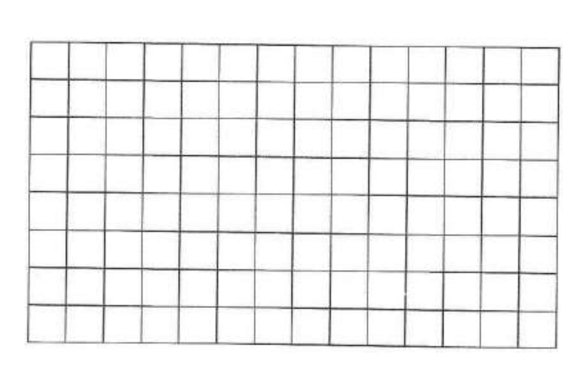
A mosque has a window that is $\frac{3}{10}$ meter wide and 2 m long. What is the area of the window in square meters ?



Draw a rectangle with an area of 24 square units.



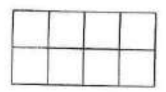
Draw a rectangle with an area of 30 square units.





Choose the correct answer:

1. The area of the opposite rectangle = ... square units.



A. 18 B. 15 C. 8 D. 12

---

2. The area of rectangle of length $\frac{2}{3}$ cm and width $\frac{2}{5}$ cm is .... cm^2

A. $\frac{3}{20}$ B. $\frac{4}{20}$ C. $\frac{4}{9}$ D. $\frac{4}{15}$

---

3. The area of rectangle of dimensions $5\frac{1}{2}$ meters and $2\frac{1}{2}$ meters is ....

A. $13\frac{3}{4}$ m B. 8 m C. 8 m^2 D. $13\frac{3}{4}$ m^2

---

4. The area of rectangle of dimensions $\frac{2}{5}$ m and $\frac{1}{3}$ m  The area of rectangle of length $\frac{3}{8}$ m and width $\frac{1}{5}$ m

A. > B. < C. =

---

5. The area of room of length 6 m and width $3\frac{1}{2}$ m is .... m^2

A. 19 B. $9\frac{1}{2}$ C. 21 D. 42

---

6. Area of rectangle = ...

A. L + W B. L × W C. $\frac{L}{W}$ D. (L + W) × 2

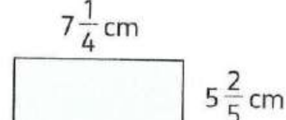
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7. The area of rectangle of dimensions $3\frac{1}{5}$ cm and $2\frac{1}{2}$ cm is ....

A. 8 m^2 B. 8 cm^2 C. 8 km^2 D. 8 cm

---

8. Area of opposite rectangle = ... cm^2



A. $25\frac{3}{10}$ B. $40\frac{1}{2}$ C. $12\frac{13}{20}$ D. $39\frac{3}{20}$

---

9. The area of rectangle with length $\frac{3}{4}$ km and width $\frac{1}{3}$ km is ....

A. $\frac{1}{4}$ km B. $\frac{1}{4}$ km^2 C. $\frac{13}{12}$ km D. $\frac{1}{2}$ km^2

---

10. A mosque has a window that is $\frac{3}{5}$ meter wide and $1\frac{1}{2}$ meters long. What is the area of the window in square meters?

A. $\frac{9}{10}$ m^2 B. $2\frac{1}{2}$ m^2 C. $2\frac{1}{10}$ m^2 D. $10\frac{1}{2}$ m^2

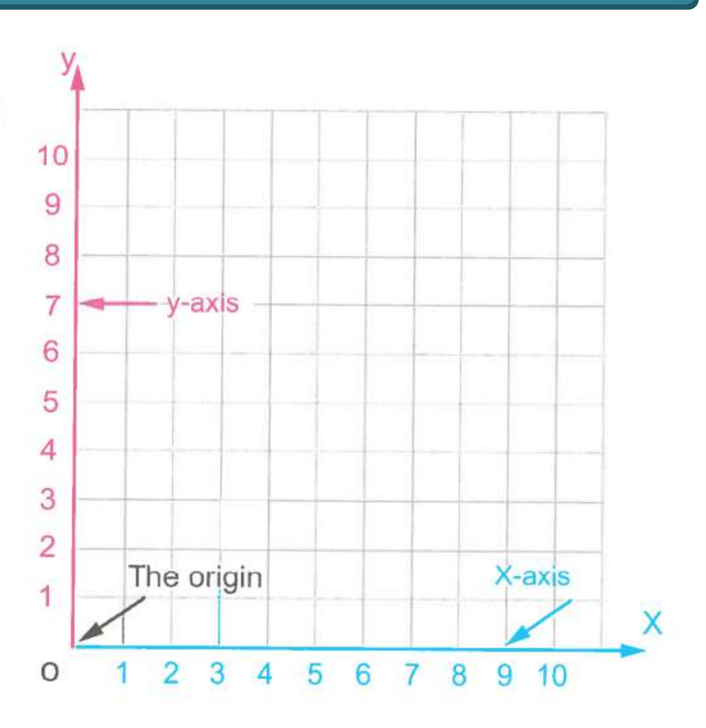


Concept (10-2)

Lesson (5) Explore the Coordinates Plane

⇨ The coordinate plane

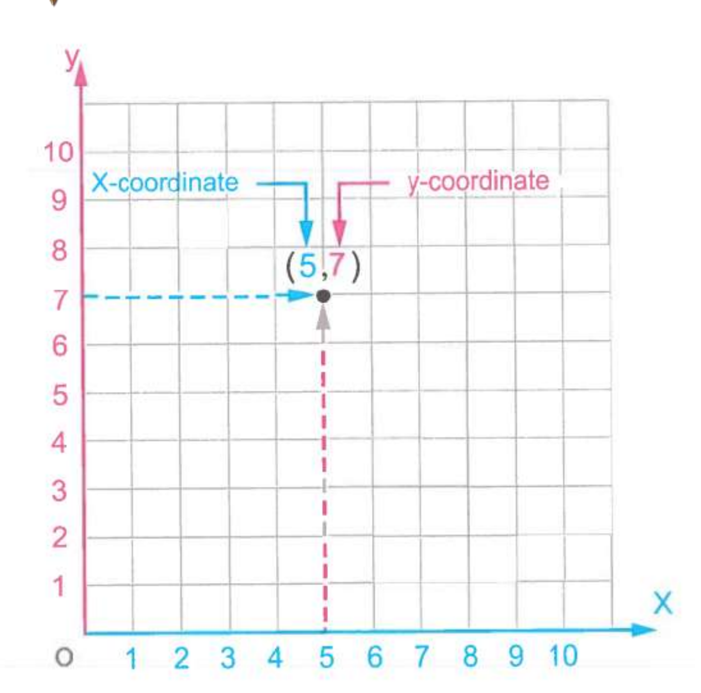
The coordinate plane is the plane determined by a horizontal line, called the x-axis, and a vertical line, called the y-axis, intersecting at a point, called **the origin.** It is labeled as "**O**"





⇨ The ordered pair

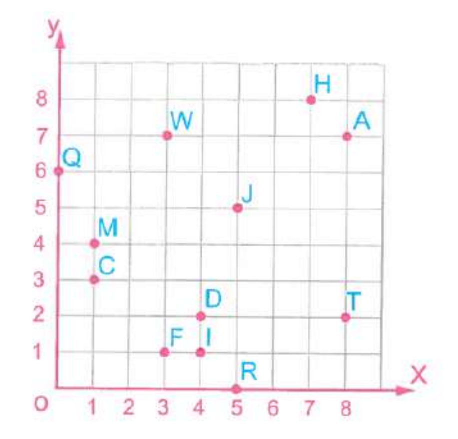
The ordered pair is a pair of numbers used to locate any point on a coordinate plane. Ordered pairs are written left to right (x , y)





Lesson (6) Plotting Points on a Coordinate Plane

Using the following graph, answer [a] , [b] and [c]



a. What is the name of each of the following points ?

1. (3 ,1)
2. (7 ,8)
3. (1 ,4)
4. (5 ,0)
5. (8 ,7)
6. (4 ,2)
7. (5 ,5)
8. (1 ,3)

b. Write the ordered pair for each of the following points :

1. A
2. T
3. W
4. I
5. Q

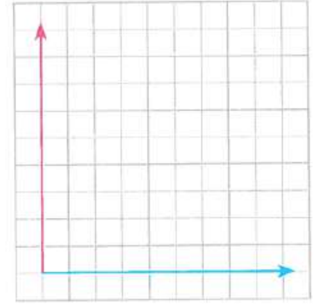
c. Plot the following points on the coordinates grid :

1. B (2 ,8)
2. E (0 ,7)
3. X (6 ,3)
4. S (8 ,5)
5. P (2 ,1)
6. G (7 ,7)



Plot the points on the coordinate grid.

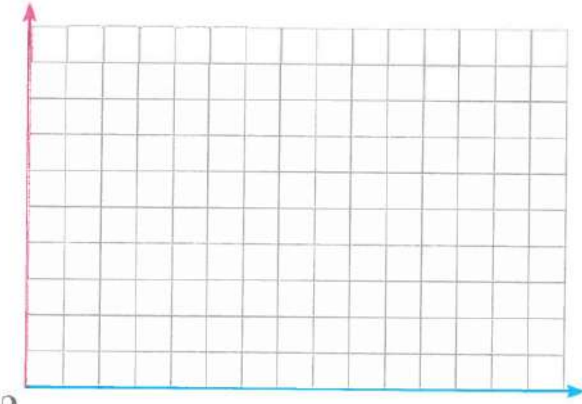
A (3 ,5) , B (6 ,5) , C (6 ,2) , D (3 ,2) and connect the points in order.



a. What polygon did you create ?

b. Complete.

- $\overline{AD}$ // ....
- $\overline{AB}$ // ....
- $\overline{DC}$ ⊥ ....
- $\overline{BC}$ ⊥ ....



a. Plot the points on the coordinate grid.

A (3 ,2) B (3 ,5)

C (6 ,5) D (6 ,2)

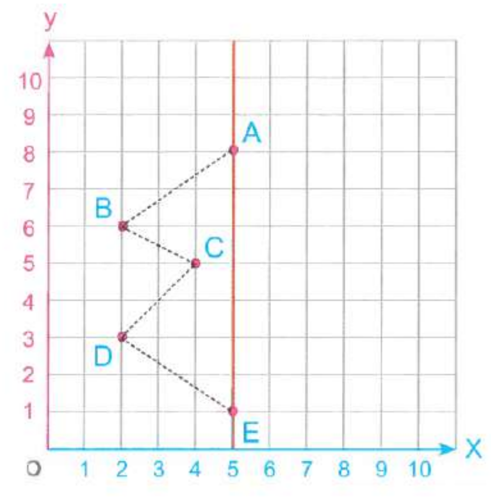
b. Connect the points in order.

What polygon did you create ?

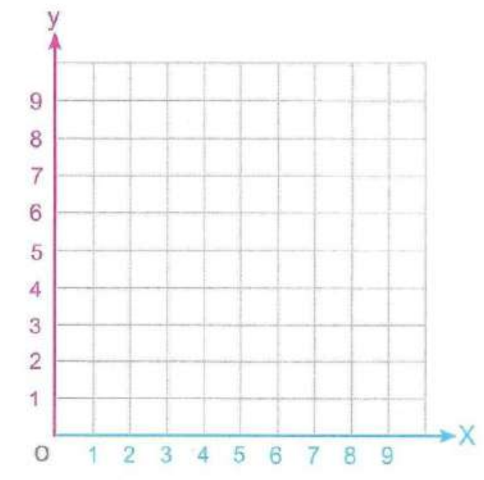


Lesson (7) Coordinate Designs

On the coordinate plane, plot points F, G, and H to make a figure that is symmetrical along the vertical orange line drawn on the coordinate plane. (Point F should follow point E) Connect point H to point A to close the shape. Then, list the coordinates of F, G and H.





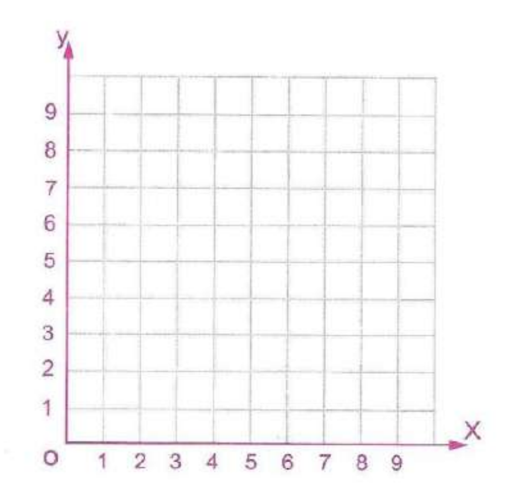


In the opposite coordinate plane :

a. Graph the figure ABCD where A (0 , 3) , B (7 , 3) , C (7 , 5) , D (0 , 5).

b. What is the name of the figure ABCD ?

In the opposite coordinate plane :

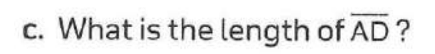


a. Graph the figure ABCD where

A (2 , 8) , B (3 , 4) ,

C (8 , 4) and D (7 , 8)

b. What is the name of the figure ABCD ?



c. What is the length of $\overline{AD}$?

d. $\overline{AD}$ // ………… , $\overline{AB}$ // …………



Lesson (8) Representing Points and Creating Patterns

Extend the following table and identify the pattern of x values and y values.

a.

x values	1	2	3	4	___	___	___
y values	1	2	3	4	___	___	___

b.

x values	10	20	30	40	___	___	___
y values	1	5	9	13	___	___	___

c.

x values	$\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	___	___	___
y values	$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	___	___	___

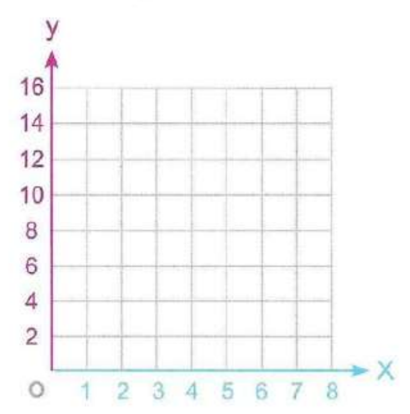
d.

x values	2	4	6	8	___	___	___
y values	36	33	30	27	___	___	___



Use the pattern to complete the table and represent on the coordinate plane.

x values	1	2	3	4	5	6	7
y values	2	4	6	8	10	___	___

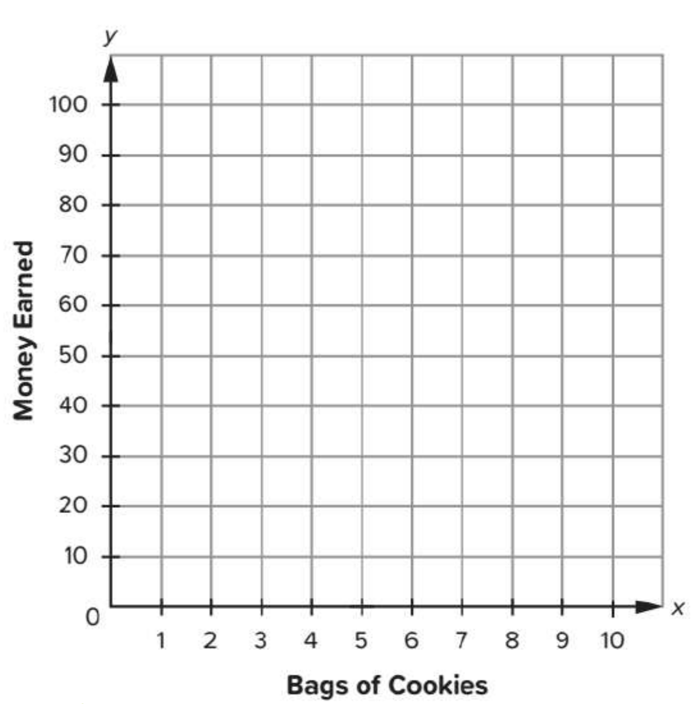




Lesson (9) Graphing Real-World Data

Ola is selling bags of cookies in her neighborhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the table and then graph the points on the coordinate grid.

Bags of Cookies	Money Earned LE
2	
4	
6	
8	
10	





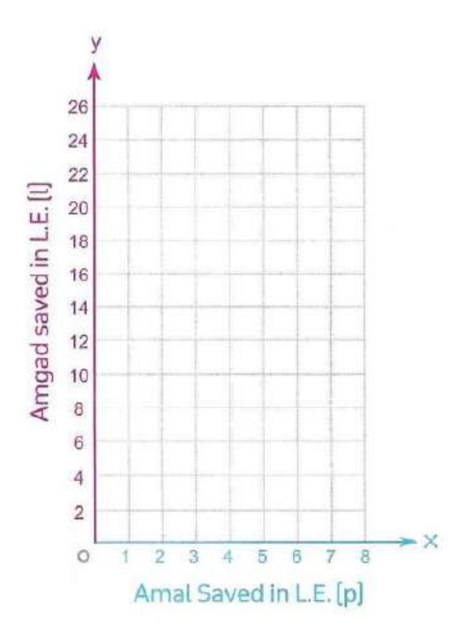
Amgad saves daily an amount of pound three times the amount his sister Amal saves.

a. Write a rule represents these information.

b. Complete the following table.

Amal saved in L.E. (p)	1	2	—	4	—	8
Amgad saved in L.E. (l)	3	6	9	—	18	—

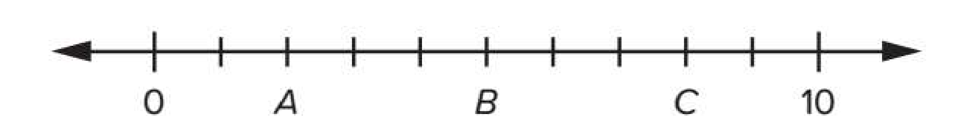
c. Using Amal saved money data as x-coordinates and Amgad saved data as y-coordinates, plot data on the coordinate grid then draw a line to connect the points.



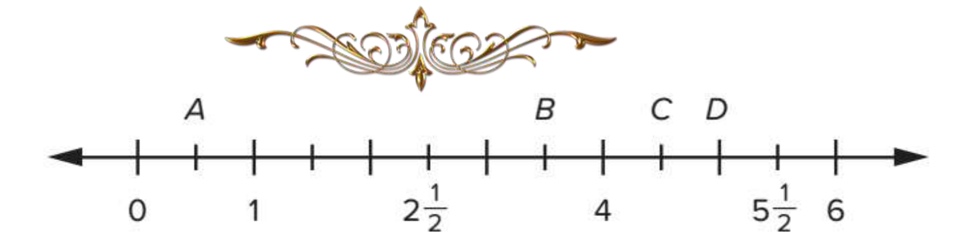




Homework



1. What is the value of B?
2. What is the value of A?
3. What is the value of C?



1. What is the value of each space between the hashmarks?
2. What is the value of A?
3. What is the value of B?
4. What is the value of C?
5. What is the value of D?



Use the ordered pairs to fill in the table.

a. (0 ,1) , (2 , 3) , (4 , 5) , (6 , 7) and (8 , 9)

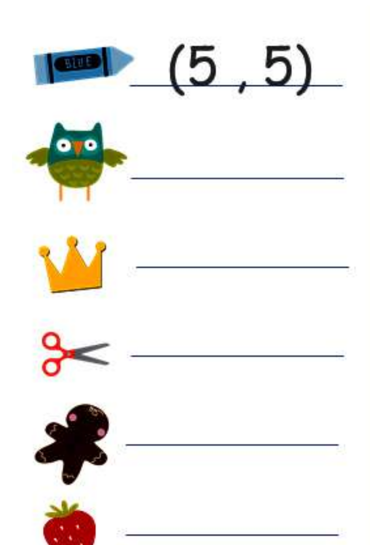
x values					
y values					

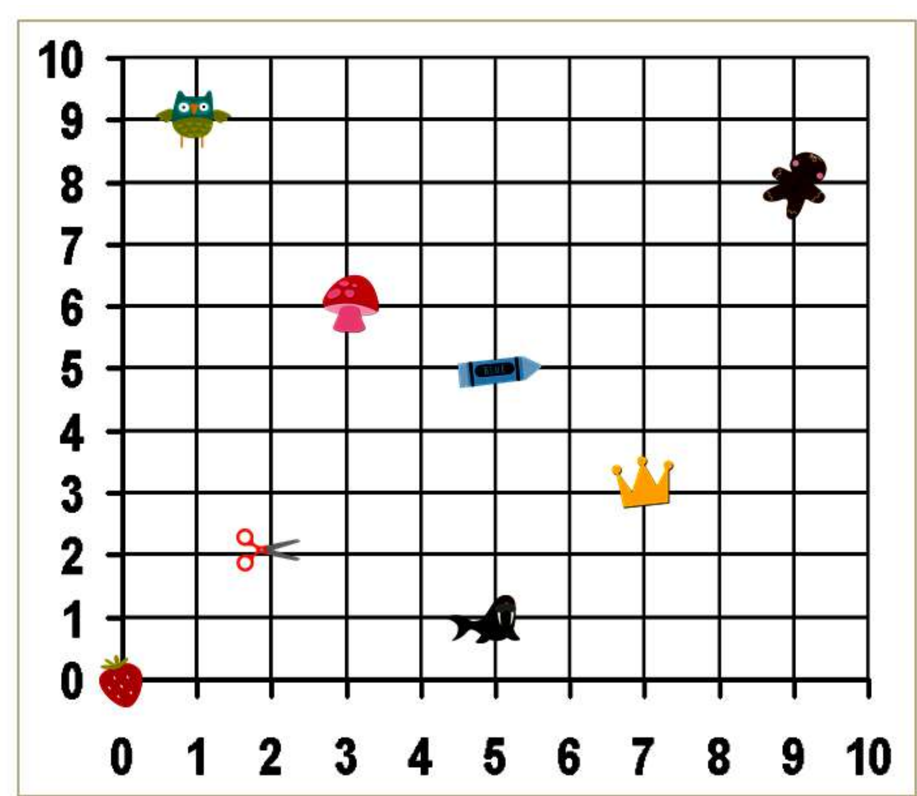
b. (1 , 1) , (2 , 2) , (3 , 3) , (4 , 4) and (5 , 5)

x values					
y values					



Write the ordered pair of each picture:

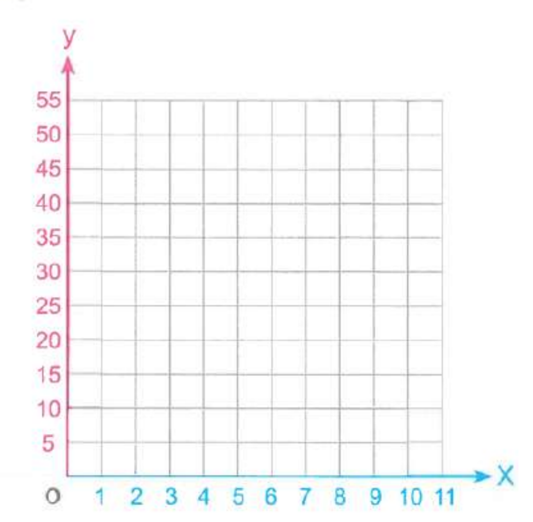






Represent the following tables on the coordinate plane.

x values	1	3	5	7	9	11
y values	5	15	25	___	___	___





Choose the correct answer:

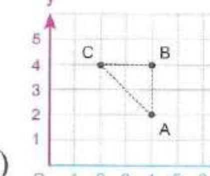
1. The y-coordinate in ordered pair (1 , 3) is ______

A. 2 B. 3 C. 5 D. 6

2. The first number in an ordered pair is ______

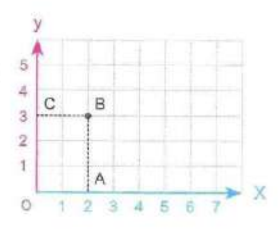
A. x-coordinate B. x-axis
C. y-coordinate D. y-axis

3. The ordered pairs which represents Δ ABC are ______



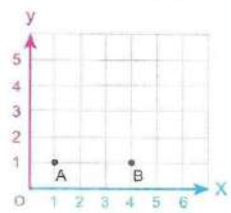
A. (4 , 2) , (4 , 5) , (2 , 5)
B. (2 , 4) , (4 , 4) , (4 , 2)
C. (2 , 4) , (4 , 1) , (4 , 2)
D. (4 , 4) , (4 , 2) , (1 , 4)

4. The ordered pairs which represents the rectangle ABCO are ______



A. (0 , 0) , (3 , 0) , (2 , 0) , (2 , 3)
B. (0 , 0) , (0 , 2) , (2 , 3) , (3 , 0)
C. (0 , 0) , (0 , 3) , (2 , 0) , (2 , 3)
D. (0 , 0) , (3 , 0) , (2 , 4) , (2 , 0)

5. The ordered pair which represents an isosceles right-angled triangle at point B is ______



A. (1 , 4) B. (3 , 4)
C. (4 , 3) D. (4 , 4)

6. a. How far is point C from point D ?

A. 2 B. 3
C. 4 D. 5

b. $\overline{AB}$ // ______

A. $\overline{AD}$ B. $\overline{BC}$
C. $\overline{DC}$ D. $\overline{AC}$

c. $\overline{DC} \perp$ ______

A. $\overline{AC}$ B. $\overline{BC}$
C. $\overline{BD}$ D. $\overline{AB}$

7. Which of the following points located on x-axis ? [El Beheira - El Nobaria 23]

A. (1 , 0) B. (0 , 1)
C. (1 , 1) D. (3 , 2)

8. Which of the following points located on y-axis ? [Cairo - Shoubra 23]

A. (1 , 0) B. (0 , 1) C. (1 , 1) D. (3 , 0)

9. The origin point = ______ [Suez 23 , El Fayoum 23]

A. (1 , 0) B. (0 , 0) C. (0 , 2) D. (1 , 2)

Unit (10) Assessment

[1] Choose the correct answer:

1. The triangle whose side lengths are .... is an isosceles triangle.
   - A. 7 cm , 7 cm , 7 cm
   - B. 5 cm , 7 cm , 5 cm
   - C. 4 cm , 5 cm , 3 cm
   - D. 8 cm , 6 cm , 9 cm

2. The area of rectangle of length $\frac{2}{3}$ cm and width $\frac{2}{5}$ cm is .... cm^2
   - A. $\frac{3}{20}$
   - B. $\frac{4}{20}$
   - C. $\frac{4}{9}$
   - D. $\frac{4}{15}$

3. The X-coordinate in ordered pair (3 , 4) is ....
   - A. 3
   - B. 4
   - C. 7
   - D. 1

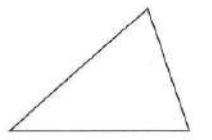
4. The value of the missing numbers in the following table is ....

x values	2	3	4	5	6
y values	2	4	6	......	......

   - A. 7 , 9
   - B. 8 , 10
   - C. 6 , 8
   - D. 10 , 12

5. The polygon which has only one pair of parallel sides is called ....
   - A. trapezium
   - B. parallelogram
   - C. rhombus
   - D. square

6. The opposite triangle is ....
   - A. right
   - B. acute
   - C. obtuse
   - D. scalene



7. The measure of any angle of the square = ... °
   - A. 60
   - B. 90
   - C. 100
   - D. 180



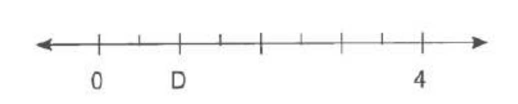
[2] Complete:

a. The four sides are equal in length in .... and ....

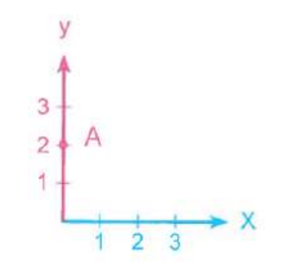
b. The triangle XYZ is an equilateral triangle whose perimeter is 18 cm , then XY = ... cm

c. In the opposite number line :

The value of D is ....



d. **In the opposite figure:**
The ordered pairs that represent the point A is ....



e. Each two opposite sides are parallel in ...., ..., ... and ....

f. The triangle opposite is .... – angled triangle.

g. The point (0 , 7) lies on .... – axis.

h. In any triangle, there are two .... angles at least.



[3] Choose the correct answer:

a. If the area of rectangle is 2 square meters and one of its dimensions is $\frac{1}{2}$ m, then the other dimension is ....

A. 1 m B. 2 m C. $2\frac{1}{2}$ m D. 4 m

b. ABC is an equilateral triangle. If two side lengths of it are 6.5 cm and 6.5 cm, then the third side is .... cm.

A. 13 B. 2.25 C. 6.5 D. 7

c. The hexagon has .... sides.

A. 4 B. 5 C. 6 D. 7

d. The y-coordinate in the ordered pair (6.5 , 6.2) is ....

A. 6.5 B. 6.2 C. 12.7 D. 0.3

e. The area of a square of side length 2.5 cm is .... cm^2

A. 6.25 B. 5 C. 10 D. 0.5

f. The subcategories of square and rhombus is ....

A. 4 right angles B. 4 equal sides
C. 2 acute angles D. 2 obtuse angles

g. Which of the following points located on x-axis?

A. (4 , 0) B. (0 , 4) C. (4 , 5) D. (5 , 4)







UNIT 11

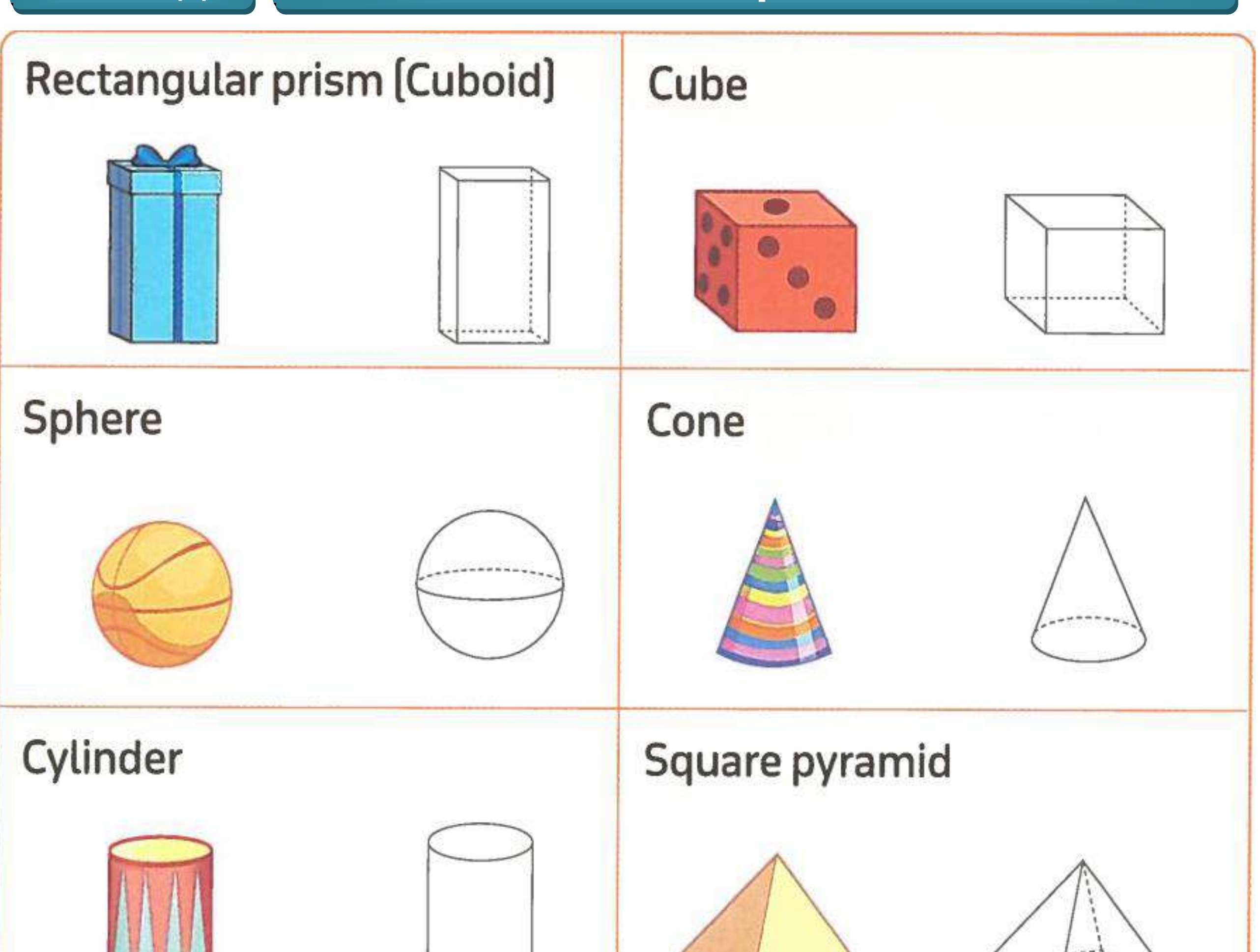
Theme 4 | Applications of Geometry and Measurement

Unit 11 Volume

Photo credit: Merydolia / Shutterstock.com

Concept (11-1)

Lesson (1) Geometric Shapes around Us



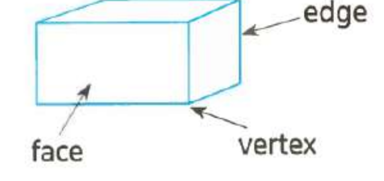


A **face** is a flat surface of a solid figure.

An **edge** is the line segment formed where two faces meet.

A **vertex** is a point where three or more edges meet.

The plural of vertex is vertices.





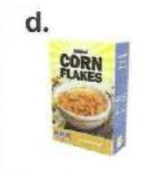
Name the solid figure that each object looks like

a. 

____

b. ____________

c. 
____

d. 

____

e. 
____

f. 
____

Complete the table:

Attributes of Three-Dimensional Shapes

	Name	Picture	Face/ Base Shape(s)	Number of Faces/ Bases	Number of Edges	Number of Vertices
1	Cube					
2	Cone					
3	Cylinder					
4	Rectangular Prism					
5	Sphere					
6	Square Pyramid					





Complete:

Write how many faces, edges and vertices are there.

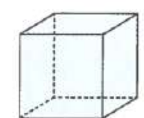
a. Sphere

- ______ vertices.
- ______ flat faces.
- ______ edges.

b. Square-based pyramid

- ______ vertices.
- ______ flat faces.
- ______ edges.

c. Cube



- ______ vertices.
- ______ flat faces.
- ______ edges.



Match:







➲ **pyramid** ➲ **sphere** ➲ **rectangular prism** ➲ **cube** ➲ **cone**





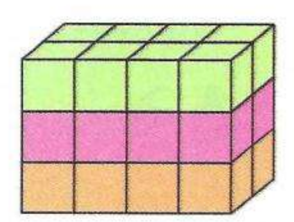




Lesson (2) Measuring Volume in Cube Units

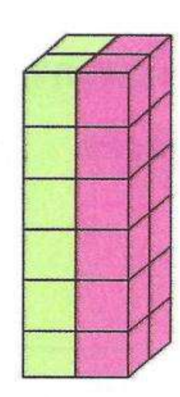
Complete:

a.



- Number of horizontal layers = ________
- Number of cube(s) in each horizontal layer = ________ cubes.
- Volume = ________ × ________
  = ________ cube units

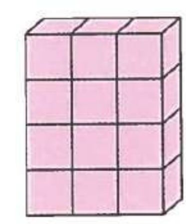
b.



- Number of vertical slices = ________
- Number of cubes in each vertical slices = ________
- Volume = ________ × ________
  = ________ cube units

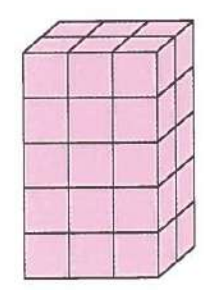


Lesson (3) Same Volume, Different Shape



1. Number of vertical slices : ________
2. Number of cubes in each vertical slice : ________
3. Volume = ________ × ________ = ________ cm^3





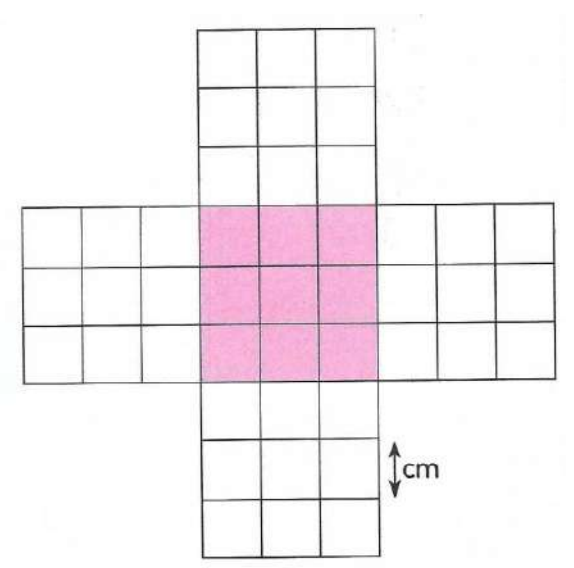
1. Number of vertical slices : ________
2. Number of cubes in each vertical slice : ________
3. Volume = ________ × ________ = ________ cm^3



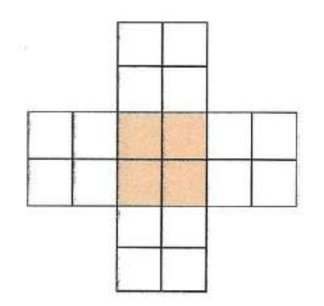
If you cut and fold the opposite net square, then complete.

a. Name of the resulted solid ....

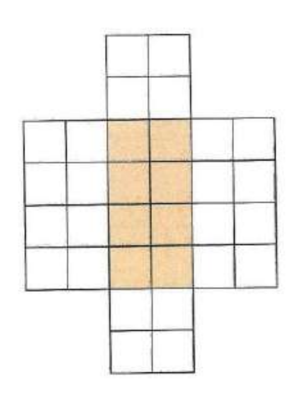
b. Volume of the resulted solid ....



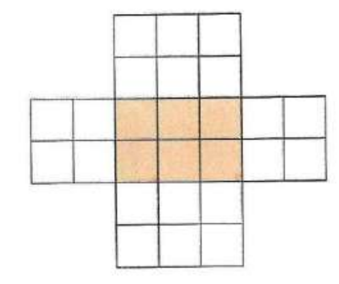




Volume : .... cubic centimeters.



Volume : .... cubic centimeters.



Volume : .... cubic centimeters.



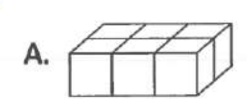
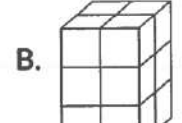
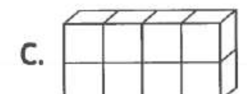
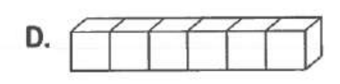
Choose the correct answer:



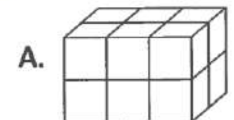
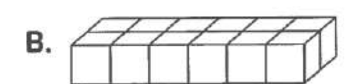
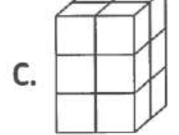
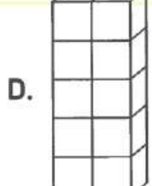
1. Volume of  is ________ cube units

A. 8 B. 12 C. 24 D. 10

2. Which of the following is of volume 8 cm^3 ?

A.  B.  C.  D. 

3. Which of the following has different volume ?

A.  B.  C.  D. 

4. A cuboid has 3 horizontal layers and 6 cube units in each layer, then its volume = ________ cube units.

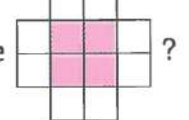
A. 9 B. 18 C. 24 D. 12

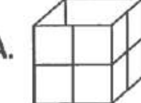
5. A cuboid has 2 vertical slices each slice has 4 cm^3, then its volume = ________ cm^3

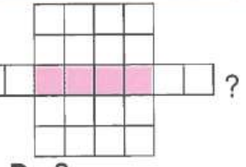
A. 6 B. 4 C. 12 D. 8

6. A box is filled by 4 horizontal layer, each layer containes 8 cube units, then its capacity = ________ cube unit.

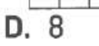
A. 4 B. 12 C. 32 D. 24

7. What solid is formed from folding the net square  ?

A.  B. C.  D.

8. What is the volume of the solid formed from folding the net square  ?

A. 12 B. 4 C. 16 D. 8

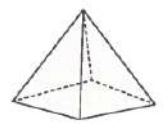


Homework

Complete:

Name the solid figure. Then tell the number of faces, edges, and vertices.

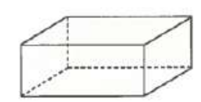
a.



Name : ________

* ________ faces.
* ________ edges.
* ________ vertices.

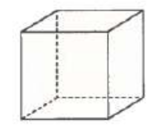
b.



Name : ________

* ________ faces.
* ________ edges.
* ________ vertices.

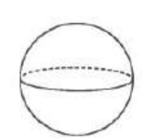
c.



Name : ________

* ________ faces.
* ________ edges.
* ________ vertices.

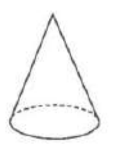
d.



Name : ________

* ________ flat faces.
* ________ edges.
* ________ vertices.

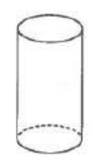
e.



Name : ________

* ________ flat faces.
* ________ edges.
* ________ vertices.

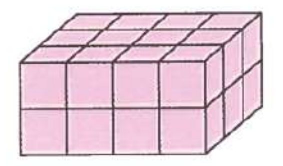
f.



Name : ________

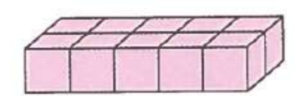
* ________ flat faces.
* ________ edges.
* ________ vertices.



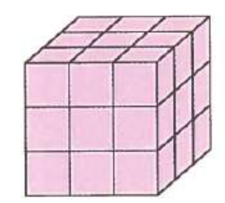


1. Number of horizontal layers : ________
2. Number of cubes in each horizontal layer : ________
3. Volume = ________ × ________ = ________ cm^3

1. Number of horizontal layers : ________
2. Number of cubes in each horizontal layer : ________
3. Volume = ________ × ________ = ________ cm^3





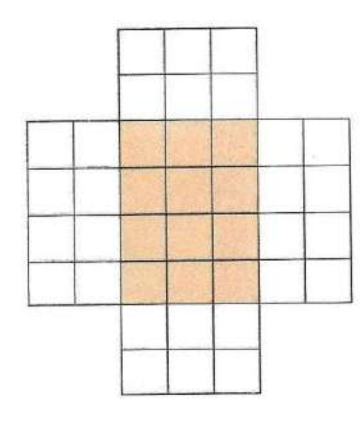


1. Number of horizontal layers : ....

2. Number of cubes in each horizontal layer : ....

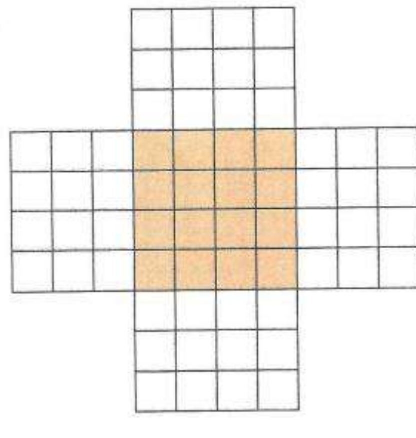
3. Volume = ... × .... = ... cm^3





Volume : .... cubic centimeters.



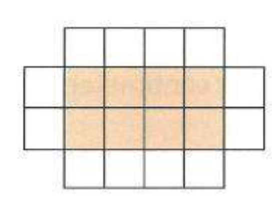


Volume : .... cubic centimeters.

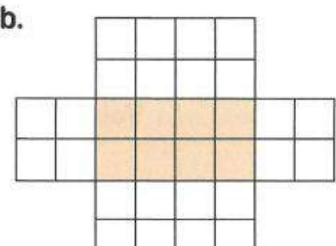


Match each net square to its suitable solid.

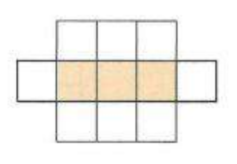
a.

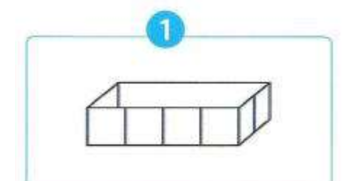


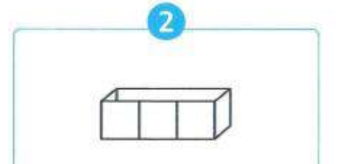
b.

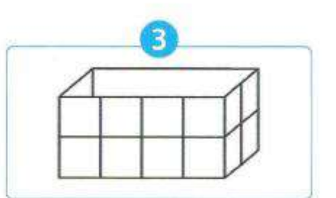


c.



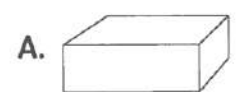






Choose the correct answer:

1. Which of the following is a cube ?

A.  B. C.  D.

2. Which of the following has 8 vertices ?

A. Sphere B. Rectangular prism
C. Square-based pyramid D. Cone

3. In which of the following you can find ?

A. Cube B. Sphere C. Rectangular prism D. Cylinder

4. The solid which has 12 edges, 8 vertices and 6 rectangle faces is ______

A. cube B. cuboid C. square base pyramid D. cylinder

5. has ______

A. 4 B. 8 C. 10 D. 2

6. Volume of ______ volume of

A. > B. < C. =

7. The cuboid has ______ edges.

A. 14 B. 8 C. 20 D. 12

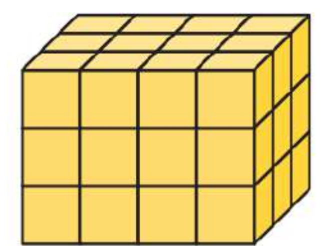
8. The pieces of cards  can form ______

A. cuboid B. cube C. pyramid D. cylinder

Concept (11-2)

Lesson (4) Finding a Formula

Label the dimensions of the rectangular prism. Each cube is 1 centimeter on all sides.



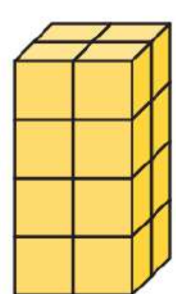
Length: ________________ cm

Width: ________________ cm

Height: ________________ cm



Record the dimensions of the given rectangular prism and then find the volume.



Length: ________________ cm

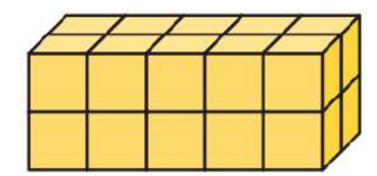
Width: ________________ cm

Height: ________________ cm

Volume: ________________ cm^3



Record the dimensions of the rectangular prism and then find the volume.



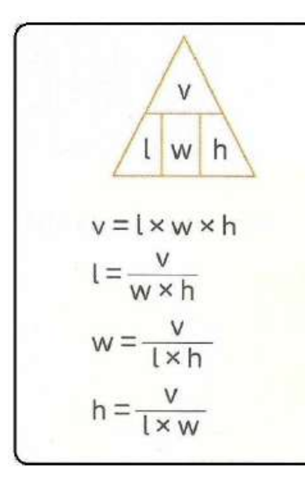
Length: ________________ cm

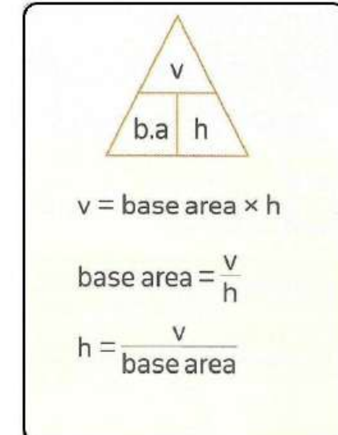
Width: ________________ cm

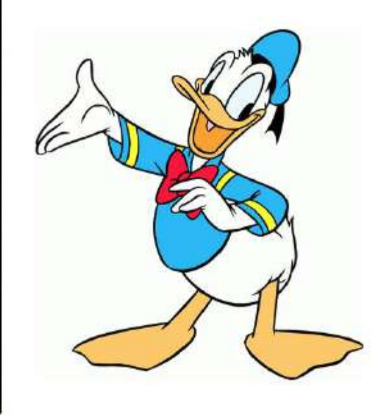
Height: ________________ cm

Volume: ________________ cm^3



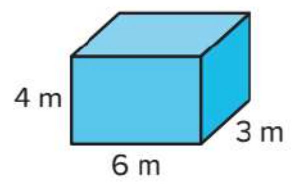


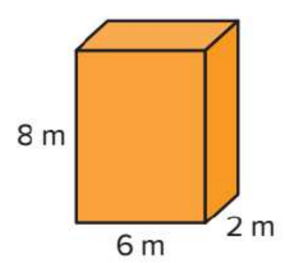


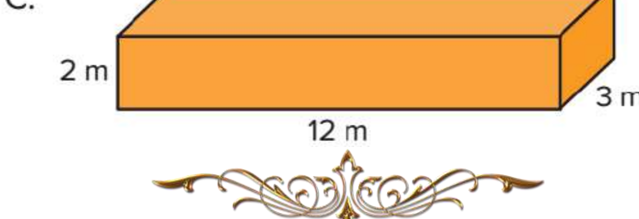


Lesson (5) Using a Formula to Find Volume

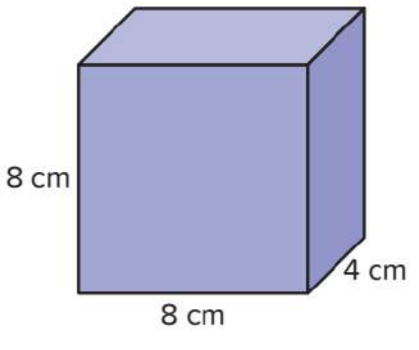
Compare the dimensions of the rectangular prisms. Which two prisms have the same volume? Explain how you know.

A.


B.


C.


Multiply to find the volume of the prism. Record your equation and the total volume. Be sure to include units.

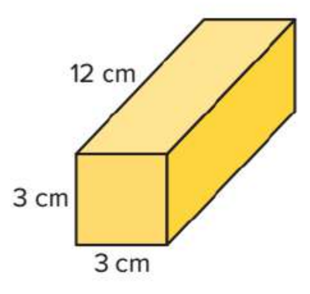


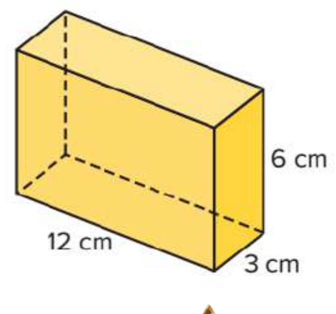
Equation: ____________________

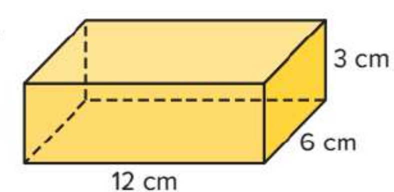
Volume: ____________________



Eman says that prism B has the greatest volume because it has the greatest height. Do you agree or disagree? Explain your thinking.

A.


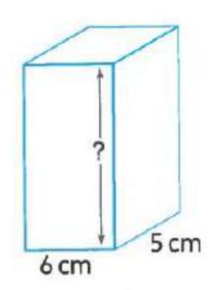
B.


C.




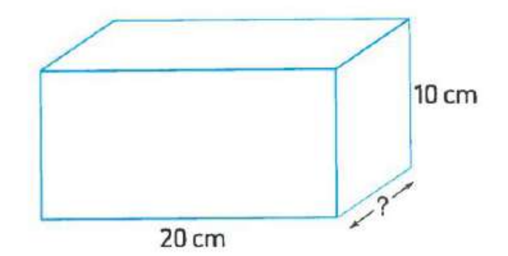
Complete:

a.



- Volume = 300 cm^3
- Missing dimension = ______ cm

b.

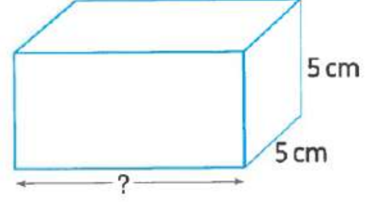


- Volume = 1,200 cm^3
- Missing dimension = ______ cm



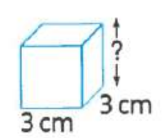
Complete:

c.



- Volume = 250 cm^3
- Missing dimension = ______ cm

d.

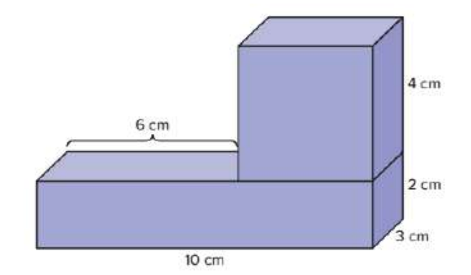


- Volume = 27 cm^3
- Missing dimension = ______ cm



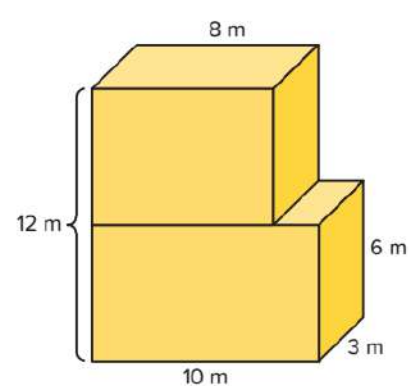
Lesson (6) Finding the Volume of Compound Shapes

Determine the volume of the given compound shape.





Determine the volume of the given compound shape.





Lesson (7) Solving Real-World Volume Story Problems

8,100 cm^3 of water are poured in a cuboid-shaped vessel with a square base of side length 25 cm. **Find the height of water in the vessel.**



Osman built a planter box for his backyard. The length of the planter box was 150 centimeters. The width was 90 cm, and the height of the box was 120 cm. Osman poured soil into the box up to the 100 cm height line. What is the volume of the planter box? What is the volume of the soil?



Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?



A juice case is in the shape of cuboid, its base is square-shaped of side length 6 cm and its height is 15 cm

Calculate the volume of juice which fills the case completely.

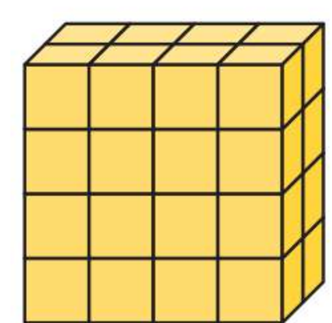


A swimming pool is in the shape of a cuboid, its base is of length 60 meters and its width is 40 meters. **Find its depth if 36,000 m^3 of water fill this swimming pool completely.**



Homework

Record the dimensions of the rectangular prism and then find the volume.



Length: ______________ cm

Width: ______________ cm

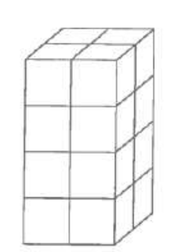
Height: ______________ cm

Volume: ______________ cm^3

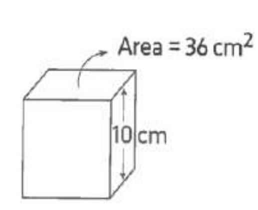


Find the volume of each figure:

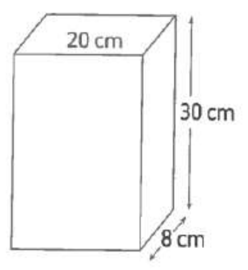
a.



b.



c.



a. ______________________________

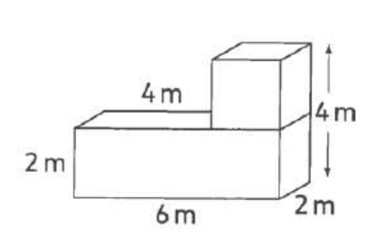
b. ______________________________

c. ______________________________



What is the volume of the given compound shape?

a.

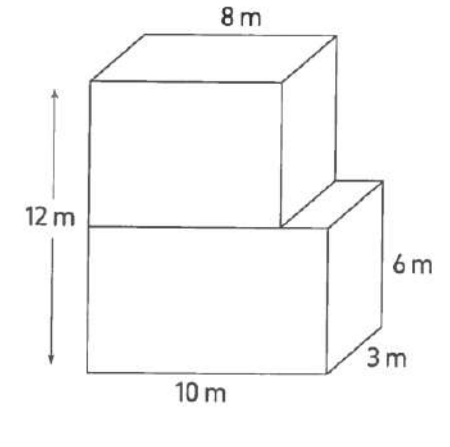


____

____

____

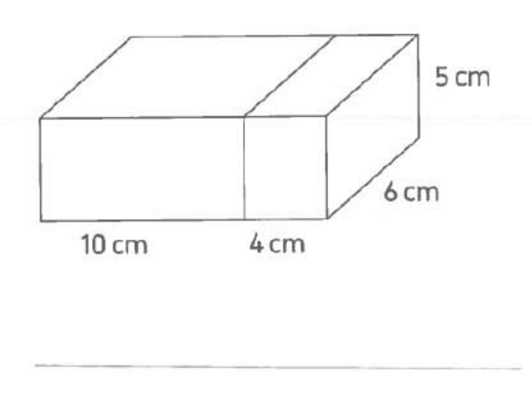
b.



____

____

____



d.

5 cm
6 cm
10 cm
8 cm
4 cm



A builder used 100 bricks for building up a wall. If each brick is in the shape of a cuboid of dimensions 25 , 12 and 6 centimeters. **Calculate the volume of the wall.**



A cuboid-shaped swimming pool has a base of dimensions 60 m and 30 m and its height is 3 m Water was poured into the pool till its level reached 1 m from the brim of the pool.

Find the volume of water in m^3





Unit (11) Assessment

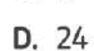
[1] Choose the correct answer:

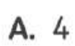
a. Which of the following has the same number of vertices as the sphere ?

A. Cube B. Cone C. Pyramid D. Cylinder

b. Number of edges of cube + number of edges of cone = ______

A. 12 B. 13 C. 24 D. 14

c. Number of horizontal layers of  is ______ 



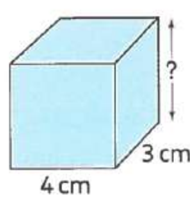
A. 4 B. 2

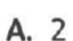
C. 3 D. 24

d. Cuboid of length 5 m, width 2 m and heigh 3 m, then its volume = ______

A. 30 cm^3 B. 10 cm^3 C. 12 cm^3 D. 30 m^3

e. Length of the missing dimension in the opposite figure its volume 48 cm^3 is ______ cm.



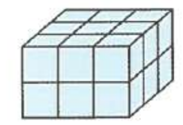



A. 2 B. 3

C. 4 D. 5

f. Capacity of water can be poured in a cuboid vessel of inner dimentions 30 cm, 20 cm and 10 cm equals ______ cm^3

A. 60 B. 6,000 C. 5,000 D. 4,000

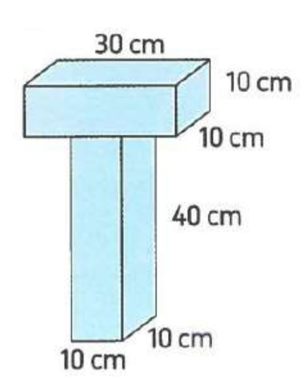
g. Volume of  equals ______ 

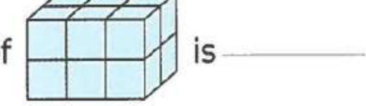
A. $(3 + 3) \times 2$ B. $(3 + 2) \times 3$ C. $3 \times 2 \times 3$ D. $3 + 2 + 3$



[2] Complete:

a. Volume of the opposite compound shape is ______



b. Number of cube units of  is ______

c. The 3 dimensions shape of one vertex is ______

d. Rectangular prism has 2 horizontal layer and each layer has 6 cube units, then its volume = ... cube units.

e. Cuboid of base area 16 cm^2 and heigh 3 cm , then its volume = ... cm^3

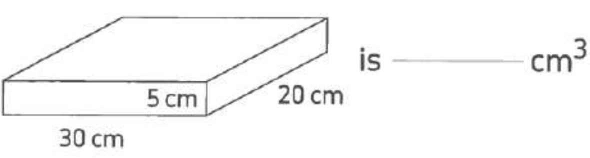
f. Volume of cuboid is 40 cm^3, its length 5 cm and width 4 cm, then its height = ... cm

g. Cylinder has .... edges.

h. Volume of cuboid = ... × heigh



[3] Choose the correct answer:

a. The volume of 

is .... cm^3

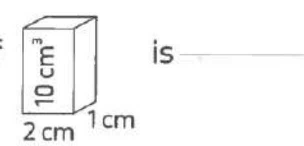
A. 3,000 B. 300 C. 30 D. 30,000

b. The cone has .... vertex.

A. 0 B. 3 C. 2 D. 1

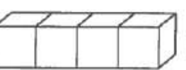
c. The .... has no vertices, no edges and no faces.

A. cylinder B. sphere C. cube D. cuboid

d. The missing dimension of 

is ....

A. 5 cm B. 5 cm^3 C. 2 cm^3 D. 8 cm

e. Number of horizontal layers in  is .... layers.

A. 4 B. 3 C. 2 D. 1

f. If number of horizontal layers in a cuboid is 4 layers and each layer has 10 cube units, then its volume = ... cube units.

A. 10 + 4 B. 10 – 4 C. 10 ÷ 4 D. 10 × 4

g. Number of faces of cube ◯ Number of faces of cuboid.

A. > B. < C. =

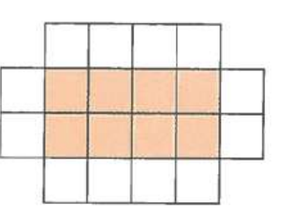


[4] Answer the following:

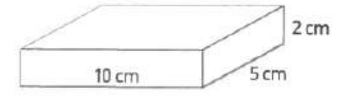
a. Which is greater in volume? A cuboid of length 50 cm, width 40 cm and height 30 cm or a rectangular prism whose base area 3,000 cm^2 and height 15 cm.

b. Ramy used 15 cubes to build a 3 dimensions shape if volume of each cube is 27 cm^3, then find the volume of compound shape.

c. Find the volume of obtained solid by folding the opposite shape.



d. Find the volume of the opposite figure.










UNIT 12

Theme 4 | Applications of Geometry and Measurement

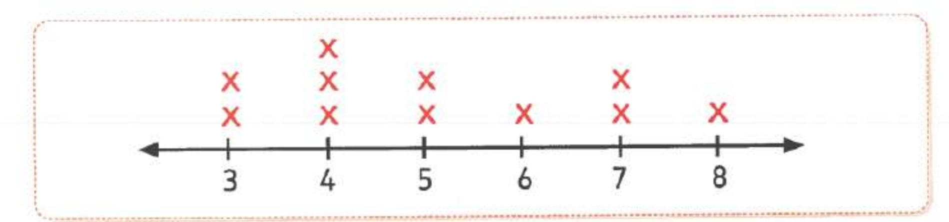
Unit 12
Pie Charts and Applying Mathematical Learning

Photo Credit: Prachaya Roekdeethaweesab / Shutterstock.com

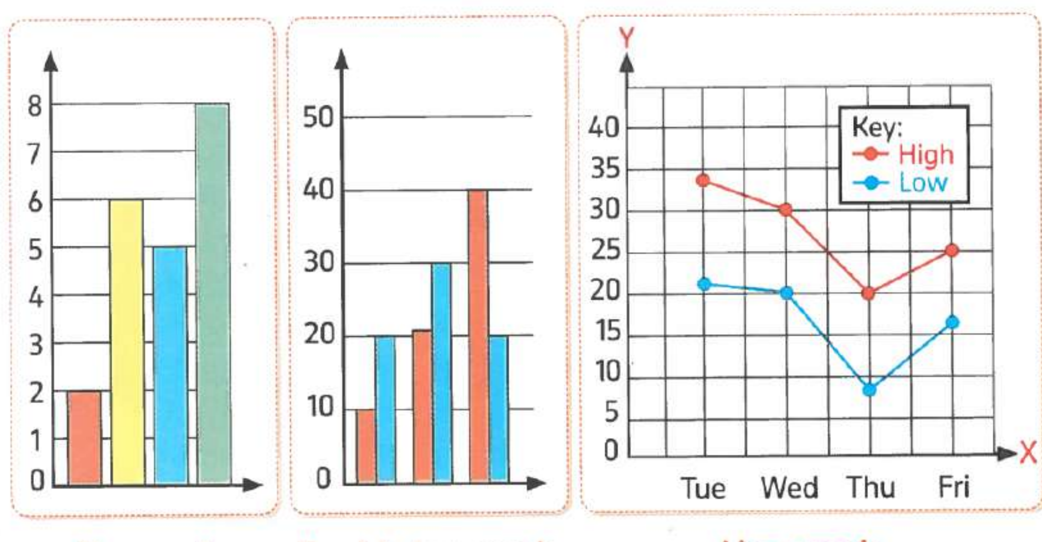
Concept (12-1)

Lesson (1) Exploring Pie Charts

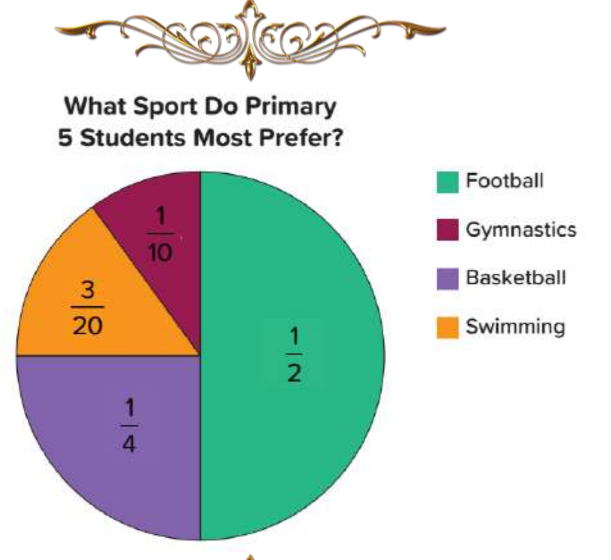
You have studied before how to represent data by line plot, bar graph, line graph or double bar graph.



Line plot

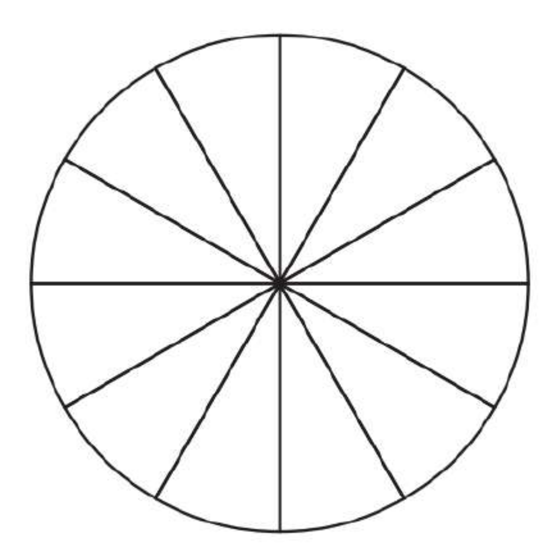


Bar graph | Double bar graph | Line graph



1. Shade $\frac{1}{2}$ of the circle red. Shade $\frac{1}{4}$ of the circle blue. Shade $\frac{1}{12}$ yellow.

   Shade $\frac{1}{6}$ green.



2. If this pie chart represents 24 students surveyed, how many students does the red section represent?

3. If this pie chart represents 24 students surveyed, how many students does the blue section represent?

4. What decimal of the group is blue?



For each task, select the circular degrees that match the fraction of the circle that is shaded. A circle has 360 degrees.

1.



A. 180° C. 60°

B. 45° D. 90°

2.

A. 180° C. 120°

B. 90° D. 45°

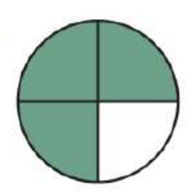
3.



A. 50° C. 60°

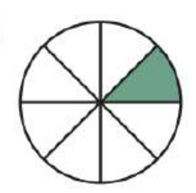
B. 120° D. 30°



4.


A. 60° C. 150°

B. 270° D. 120°

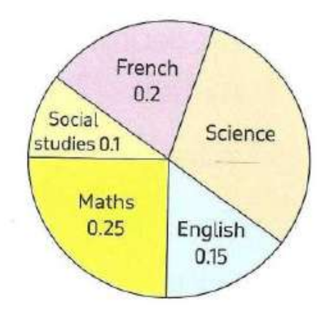
5.


A. 45° C. 30°

B. 60° D. 90°



The opposite figure shows the decimals of sales of different types of books. Complete :



a. The sales decimal of French books is ....

b. The sales decimal of Science books is ....

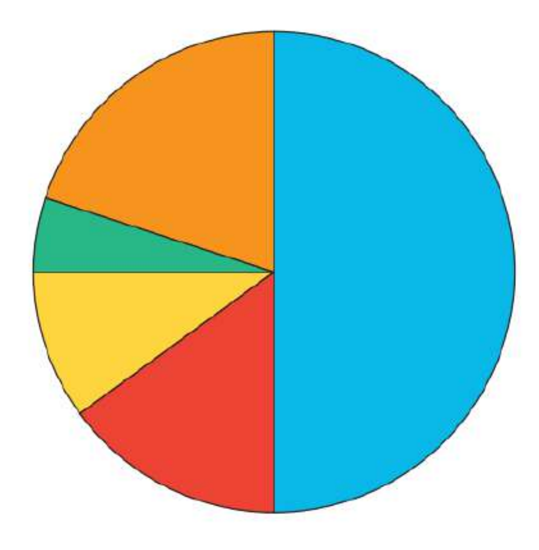
c. The least sales decimal is in ....

d. The ascending order of books types according to the decimals of sales is : ...., ..., ..., ... and ....



Lesson (2) Interpreting Data in a Pie Chart

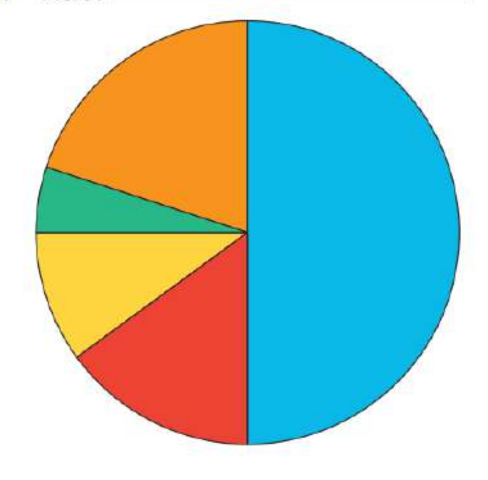
This is a pie chart without a title or a key. What could the pie chart represent? Using the colors as a guide, what information can you gather about this pie chart?



Now, give the pie chart a title and label the key based on the clues listed.

- 100 students were surveyed.
- 50 students selected chocolate ice cream.
- The smallest number of students selected mint ice cream.
- Twice the number of students who selected mint selected pistachio.
- 10 students selected pistachio ice cream.
- The same number of students selected vanilla ice cream as pistachio and mint combined.
- 20 students selected mango ice cream.

1. Title: ____________________



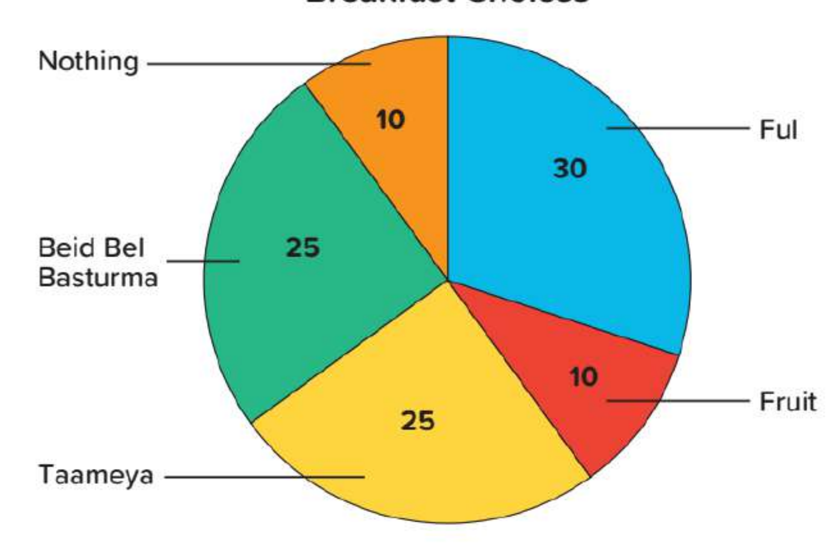
2. Key:

Color	Flavor	Number of Students
Blue	______	______
Orange	______	______
Green	______	______
Yellow	______	______
Red	______	______





Use the pie chart to answer the questions.



1. Use the data from the pie chart to complete the frequency table.

Food	Ful	Fruit	Taameya	Beid Bel Basturma	Nothing
Frequency	A. ______	B. ______	C. ______	D. ______	E. ______

2. Use the frequency to find the decimal for each breakfast option.

Food	Ful	Fruit	Taameya	Beid Bel Basturma	Nothing
decimal	A. ______	B. ______	C. ______	D. ______	E. ______

3. Use the information from the tables in the previous two tasks to find the fractional equivalents for each breakfast option. Simplify the fractions..

Food	Ful	Fruit	Taameya	Beid Bel Basturma	Nothing
Fraction	A. ______	B. ______	C. ______	D. ______	E. ______

4. What was the most frequent breakfast choice?

5. What two breakfast choices were chosen the least often?



Lesson (3) Making Pie Chart

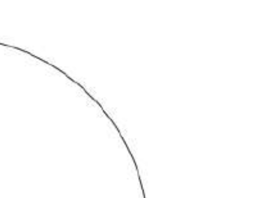
Shading Part of a Pie This frequency table shows the favorite ice cream flavors of a group of 50 children.

1. Fill in the fractions in the simplest form for each flavor.

Flavor	Mango	Vanilla	Mastic	Chocolate	Hazelnut
Frequency	5	25	6	12	2
fractions	A. ______	B. ______	C. ______	D. ______	E. ______

2. Work with your teacher and classmates to shade and label the pie chart using the data from the table. Include a title and a key.
3. What is one question that could be answered by this pie chart?

Title: ______________________



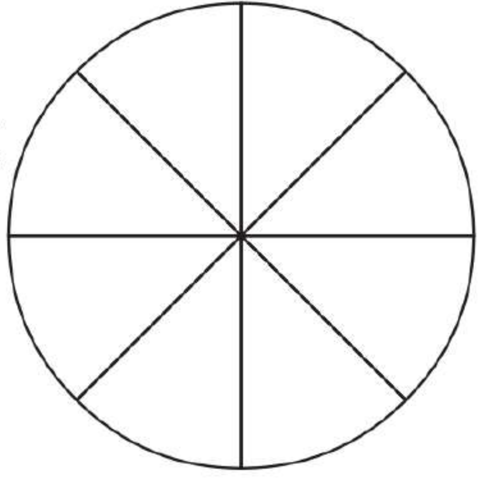
Key:

Flavor	Frequency	fractions
Mango	5	A. ______
Vanilla	25	B. ______
Mastic	6	C. ______
Chocolate	12	D. ______
Hazelnut	2	E. ______



Homework

1. Shade in $\frac{3}{4}$ of the circle green, $\frac{1}{8}$ of the circle blue, and $\frac{1}{8}$ of the circle red.



2. If this pie chart represents 40 students surveyed, how many students do the red and blue sections represent?
3. What decimal of the group is green?



The opposite figure shows the favorite hobbies for 100 pupils in the fifth primary, study the figure, then answer.

School broadcast 22
Theatre 25
School press 18
Music 20
Rangers 15

a. What is the fraction of the theatre with respect to all hobbies?

b. What is the fraction of the broadcast with respect to all hobbies?

c. What is the measure of the central angle of the sector of the music?

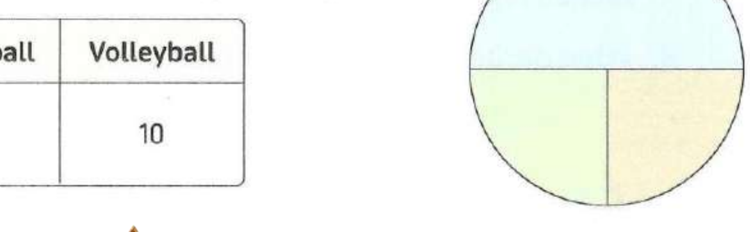
d. What is the hobby that the least pupils prefer?

e. What is the hobby that the most pupils prefer?

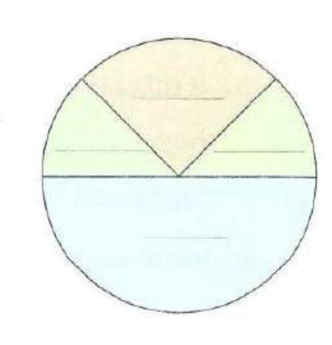


The following table shows the number of students who practice sports. Represent these data using the pie chart on the opposite figure.

Sport	Football	Basketball	Volleyball
Number of students	20	10	10



An employee spends his salary as follows.



L.E. 200 for clothes.

L.E. 800 for food.

L.E. 400 for transportation and medicine.

L.E. 200 for renting an apartment.

Graph that data on the opposite pie chart.

When some students were asked about the most popular TV programs, the following data were extracted.

$\frac{1}{2}$ of the students like to watch sports programs.

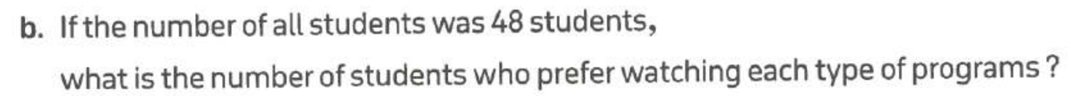
$\frac{1}{4}$ of the students like to watch cultural programs.

$\frac{1}{8}$ of the students like to watch Arabic and foreign movies.

$\frac{1}{8}$ of the students like to watch news.



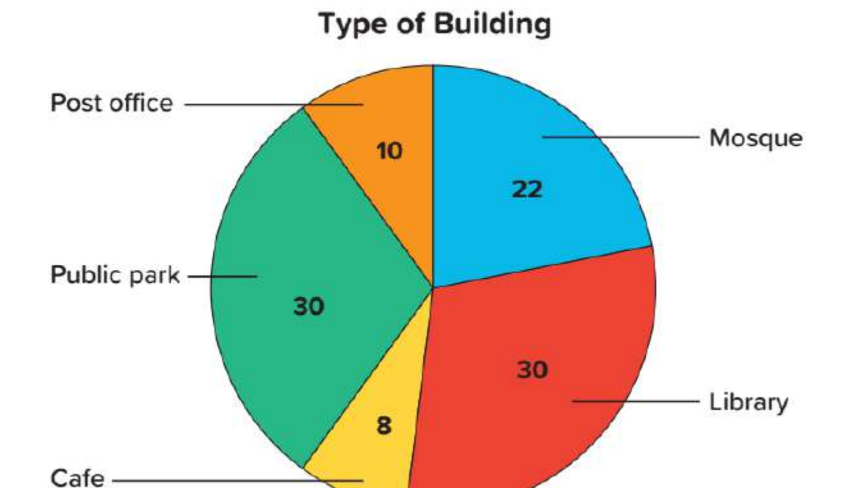
a. Represent that given data using the opposite pie chart.



b. If the number of all students was 48 students, what is the number of students who prefer watching each type of programs ?



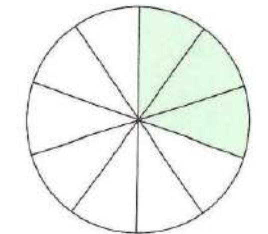
What Type of Building Does the Community Need? The given pie chart represents a group's opinion on what type of building their community needs most.



Work with a partner to write three statements and one question about this data.



Choose the Correct answer:



1. The measure of the central angle that represents the opposite colored sector is ....

A. 36° B. 72°

C. 108° D. 120°

---

2. The following table shows the fractions of favorite colors of some children.

Color	Red	Blue	Green
Fractions	$\frac{1}{2}$	....	$\frac{3}{10}$

What is the fraction that represents the red and blue colors together ?

A. $\frac{1}{5}$ B. $\frac{1}{2}$ C. $\frac{3}{10}$ D. $\frac{7}{10}$

---

3. The opposite figure represents the fractions of the sports activities for the pupils of a school, their number is 960 pupils.

Volleyball $\frac{3}{10}$
Football $\frac{2}{5}$
Handball
Basketball $\frac{1}{5}$

First : The fraction of the pupils participated in handball = ...

A. $\frac{1}{10}$ B. $\frac{1}{5}$

C. $\frac{3}{10}$ D. $\frac{2}{5}$

Second : The number of pupils who participated in football activity = ... pupils.

A. 96 B. 384 C. 480 D. 672

---

4. The following table shows the number of studying hours that Tamer did in a week :

Subject	Arabic	Maths	Science	English	Social studies	Total
Number of hours	6	10	7	9	4	36

, then the decimal of English = ...

A. 0.2 B. 0.25 C. 0.3 D. 0.35

---

5. The measure of the central angle of the circular sector that represents $\frac{1}{8}$ the circle is .... °

A. 30 B. 45 C. 60 D. 90

